79 NEW PRODUCTS: PAGE 243 • 25 PRODUCT REVIEWS: PAGE 186

## MACWORLD

The Macintosh Magazine

June 1990 \$3.95

Canada \$4.95

## COMPUTER GRAPHICS

3-D RENDERING ON THE MAC PAGE 136

#### 80MB TO 150MB HARD DRIVES

Lab Test-85 Products

### E-MAL PROGRAMS WHICH IS BEST?

QuickMail vs. InBox vs. Microsoft Mail

### 6 COMMUNICATIONS PROGRAMS:

Macknowledge, MicroPbone II, Smartcom II VersaTerm-Pro, White Knight, Zterm

#### PRINTING Without Postscrip

10 Affordable OuickDraw Printer:

TINCOFN NE 68202-5858
69 LKENKIDGE KD #KN
BYBEVKY 1 KYCENY EV10
200832 KCE 00001005 00 C

#KCE00001000# #dd0H%%%%%%%%%%%%%2-DIGIL 08202

# Preferred by nine o and manipu

Consistently, people who work with numbers have some noticeable traits.

They're intelligent, organized and thor-

ough—buttoned up, if you will.

Which explains why Microsoft Excel has been the spreadsheet standard for Macintosh ever since it was introduced in 1985. Today, 90% of Macintosh spreadsheet users do their calculating, manipulating, analyzing and presenting with it.

And while Microsoft Excel has always been easy to learn and use, it can now perform

all the complex functions you perform, but with labor-saving benefits.

You can easily build complex models, and conveniently link multiple sheets with a simple

point and click.



So the left hand knows what the right is doing, we've added a feature that will tie your data into Microsoft Word documents. Then update that same data automatically, when

With Microsoft Excel you can create impressive documents, choosing from 256 fonts and colors, variable row height and shading.

Profitability by division

#### WinMark Copiers

#### WxC 2000

Revenue (In Thousands)

Actual

Forecast

Variance

WXC 2000			A Mangall				
		JUL	AUG	SEP	OCT	NOV	DEC
Revenue (In Thousands)	Actual	\$8,400	\$12,300	\$13,900	\$8,700	\$13,000	\$21,300
	Forecast	\$6,453	\$8,800	\$10,050	\$9,460	\$12,000	\$18,900
	Variance	\$1,947	\$3,500	\$3,850	(\$760)	\$1,000	\$2,400
	%	130%	140%	138%	92%	108%	113%
Cost of Goods Sold	Actual	\$1,848	\$3,198	\$3,475	\$2,262	\$2,860	\$7,663
	Forecast	\$1,549	\$2,288	\$2,312	\$1,608	\$2,640	\$3,969
	Variance %	\$299 119%	\$910 140%	\$1,164 150%	\$654 141%	\$220 108%	(\$3,969) 0%
	Gross Profit	\$6,552	\$9,102	\$10,425	\$6,438	\$10,140	\$21,300
WxC 1000							
	=30 110 // 14	JUL	AUG	SEP	ОСТ	NOV	DEC

\$2,184

\$1,613

5571

135%

\$3,198

\$2,200

5998

145%

\$3,892

\$2,513

\$1,380

155%

\$2,610

\$2,365

\$245

110%

\$4,030

\$3,000

\$1,030

134%

\$5,325

\$4,725

\$600

118%

# ut of ten calculating lative people.

it's been changed in Microsoft Excel.

To insure data integrity, we've even built in alerts that will warn you of such grievous errors as circular references. In fact, Microsoft Excel is so bright, it will actually review your worksheet and flag any formulas that don't fit an established pattern.

Furthermore, the search and replace function can make corrections on a global scale. And customized number formatting lets you bend the rules, allowing you to create everything from a 3-digit account code to a 17-digit part number.

Now, we've left a lot out in this short discourse, but Microsoft Excel hasn't. So be sure to ask your dealer for a complete explanation of its capabilities. And you'll see how Microsoft Excel will make your job easier and better.

Or, if you look at it a different way, you'll become a more effective manipulator. And a more

efficient calculator.

Microsoft
Making it all make sense

Then you can Paste Link those worksheets and charts into your Microsoft Word documents and update them automatically.

#### WinMark Copiers

TO: Shannon Pitts

FR: Peter Cohen

DT: November 13th, 1989

RE: Presentation to the Board

In preparation for the annual meeting, I've created a 20-minute slide presentation on our successful entry into the small printer market.

The presentation will explain to the shareholders that, on a basis of sound marketing strategy, reinforced with our knowledge of the printer business at other levels, we have been able to grow from a 2 percent share of market, to 9 percent in 18 short months.

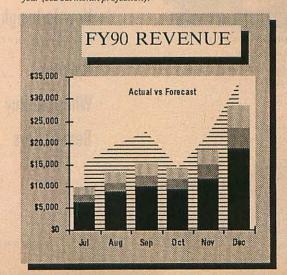
To the right is an excerpt of the presentation which illustrates our growth. Anticipated concerns will probably center around quality of service and the ability to meet market demand over the next year.

We should be able to squelch any fears by explaining that our small printers have a very low (4%) field repair call requirement at

And our assembly resources here in the

#### WxC 2000 JUL AUG SEP Revenue (In Thousands) \$8,400 \$12,300 \$13,900 Actual \$6,453 \$8,800 \$10,050 Forecast \$1,947 \$3,500 Variance \$3,850 140%

With a very respectable 9 percent share after only 18 months, we feel we can reach 15 percent by the end of the next fiscal year (see six month projection).



## CONTENTS

#### DEPARTMENTS





Our cover illustration, by Drew Huffman of Paracomp and Eliot Smyrl of Pixar, proves the Mac can produce state-of-the-art computer graphics (see Art Beat, page 53). Our rendering feature begins on page 136.



You may get your next E-mail over a radio network (see News, page 107).

How to Contact Macworld	
MacBulletin	17
Commentary/Jerry Borrell	23
Letters	29
Art Beat	53
The Iconoclast	61
Conspicuous Consumer	73
State of the Mac	97
News	107
New Products	243
How To/Quick Tips	257
How To/Getting Started with Virus Protection	265
How To/Insights on Panorama 1.5	
Updates	287
Where to Buy	
Rest-Sellers	





#### FEATURES

Get Realistic
Midrange Hard Disks
Calling Information
E-Mail: A Postal Inspection
Printing without PostScript

What's new in the midrange hard disk market? Lower prices and bigher quality (see page 146).





A call for entries: win great prizes, get famous in our Art Contest (page 185) and SuperStacks Contest (page 145).

#### REVIEWS

Adobe Photoshop 1.0 . . . . . . . . 186

Photo design and production tool.
Personal LaserPrinter II
TypeAlign 1.0
Abaton InterFax 24/96 192 External fax modem.
Color scanning from gray-scale and black-and-white scanners.
ParaFont 1.02
CD Companion Series: Ludwig van Beethoven Symphony No. 9 201 HyperCard and CD audio program.
Master Tracks Pro 4 203 MIDI sequencer.
Data Desk 3.0
DataShaper 1.0
Ashlar Vellum 1.0
RecordHolderPlus 3.1
Andrew Tobias Managing Your Money 3.0
Math Blaster Mystery 1.0 219 Math education game.
CopyFlow 2.0
Azimuth 1.0
Address Book Plus 1.0 and
DynoDex 1.1
Spectrum/24 Series III
Interactive Physics 1.0 233 Physics experiment simulator.
The Microsoft Office 1.0
Window Shopping

## AnthroCart®

The Original AnthroCart. Mobile. Compact.
Incredibly strong. So many ways to solve your space
and equipment problems!

Start with our smallest cart. Customize it. Choose from 30 options...





or maybe you need a bit more room. We have carts 25" wide to 48" wide...





or connect any of our carts into complete workstations...





Call us for a complete catalog or to place an order: 800-325-3841

6:30 a.m. to 5:00 p.m., PST

- Prices start at \$299 for the smallest AnthroCart
- All AnthroCarts easily hold up to 150 lbs. (all steel frame construction)
- Available for OEM applications
- · Made in U.S.A.



Anthro® Technology Furniture® 3221 N.W. Yeon St. Portland, Oregon 97210 (503) 241-7113

Anthro and Technology Furniture are registered trademarks of Anthro.

#### **MACWORLD**

Editor-in-Chief Jerry Borrell

#### EDITORIAL

Managing Editor Charles Barrett Senior Editor/Features Adrian Mello Editorial Manager Jane Lagas Senior Associate Editor/Depts, Deborah Branscum Senior Associate Editor/Lab Manager Chip Carman Senior Associate Editor/Features Joe Matazzoni Senior Associate Editor/East Coast Brita Meng Senior Associate Editor/Reviews Carol Person Senior Associate Editor/Features Cheryl E. Spencer Associate Editors/News Dan Littman, Tom Moran Associate Editor/Features Suzanne Stefanac Associate Editor/Reviews Liza Weiman Senior Production Editor Luis A. Camus Senior Copy Editor Ruth Henrich Assistant Editors Cathy E. Abes. Mark Hurlow, Mary Margaret Lewis Production Editor Jo Ann Villalobos Copy Editors Marjorie Baer, Emily Bower, Felicity O'Meara, Katherine L. Ulrich Production Assistant Lisa Brazieal Editorial Assistant Julian C. R. Okwu Editorial Administrative Assistants Suzanne Courteau, Lyn Taylor Assistant to the Editor-in-Chief Sandy Butler Andrew Fluegelman Intern Jonathan Cassell

Assistant to the Editor-in-Chief Sandy Butler
Andrew Fluegelman Intern Jonathan Cassell
Contributing Editors Nancy E. Dunn, Robert C.
Eckhardt, Erfert Fenton, Rob Hahn, Jim Heid, Dave Kosiur,
Steven Levy, David Pogue, Lon Poole, Steve Roth,
Charles Seiter, Franklin N. Tessler, Bruce F. Webster
Overseas Editors Osmund Lind Iversen, Editor,
Australian Macworld, tel. 02-439-5133; Peter Worlock,
Editor, Macworld (U.K. edition), tel. 01-831-9252

#### ARTANDDESIGN

Design Director Donnis McLood
Art Director Joanno Hoffman
Assistant Art Directors Nancy Paynter, Kent Tayenaka
Designer Loslio Barton
Designer/Informational Graphics Arne Hurty
Associate Designers Andrew Faulkner, Hae Yuon Kim
Senior Design Associate Tim Johnson

#### PRODUCTION

Design Associate Martha Katt

Director of Manufacturing Anne Foley
Production Manager Claudia Dawn Smukler
Advertising Billing Coordinator So Fong Yip
Advertising Traffic Coordinator Annette Garcia

President and Publisher

Macworld Communications, Inc. James E. Martin

Assistant to the President Terri Edelman

June 1990, Volume 7, Number 6

Macuorld (issn 0741.8647) is published monthly by Macworld
Communications, Inc., 501 Second Street, San Francisco, CA94107.
Subscription rates are \$30 for 12 Issues, \$60 for 24 issues, and \$90
for 36 issues. Foreign orders must be prepaid in U.S. funds with
additional postage. Add \$16 per year from Canada and Mexico, add
\$16 per year for surface mail or \$95 per year for airmail from all
other countries. Second-class postage paid at San Francisco, California, and at additional mailing offices.



## It's Going Where No High-Speed Modem Has Gone Before.

There's nothing more advanced for Macintosh networks than the new high-speed NetModem V.32. Because the NetModem V.32 pushes performance to the limit. Just plug one into your network and every connected Mac can communicate at any

speed up to a sizzling 9,600 bps with full V.32 compatibility. The NetModem V.32 is easy to use, even if you've never seen a modem before, with menubar 'LEDs' and familiar modem sounds fed back to your Mac as your call progresses. It's also economical, saving the expense of a dedicated Mac, multiple modems and extra phone lines – not to mention excessive telephone and online charges.

SPEED	***
NETWORK SHARING	***
REMOTE BRIDGING	****
EASE OF USE	****
DIAL-IN NETWORK ACCESS	***

It even lets you dial in to your network from a remote site to access files, use TOPS, AppleShare, E-mail, printers or any other network resource. And it lets any Mac on your network access a remote network thousands of miles away, creating a pow-

erful, high-speed wide-area internetwork. The Hayes-compatible NetModem V.32 comes with Internet Manager software that lets you create network zones, control traffic, restrict access between zones – even check the location and status of every device in the system. The NetModem V.32 is setting a whole new standard. For more information, call Shiva at **1-800-458-3550**.

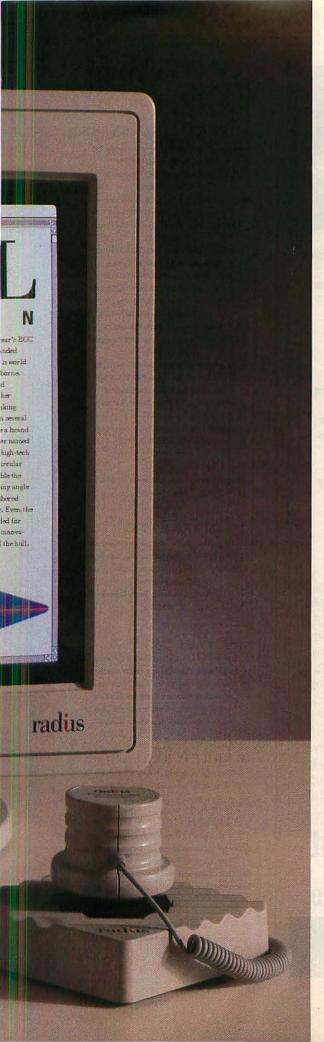
## Net Modem V.32 by Shiva

We're Putting Networks To Work®

155 Second St., Cambridge, MA 02141

All product names are trademarks of their respective manufacturers.





## WITH RADIUS, THE COLOR YOU SEE IS THE COLOR YOU GET.

Radius and Pantone, Inc. have created a new electronic color standard for Macintosh. It's the breakthrough graphic designers and

publishers have been waiting for.

Introducing the color system for Macintosh that's approved by Pantone. Now with a Radius Color System, you can work with accurate PANTONE®\* Color simulations on screen. Which means the colors that appear on your Radius Color Display in programs like Quark XPress, Aldus FreeHand and PageMaker will be the colors you'll see when your press proofs come in.

The key to color accuracy in Radius Color Systems is the Radius

PrecisionColor Calibrator™

PrecisionColor fine tunes your 8, 16 or 24-bit Radius Color Display for accurate PANTONE Color simulations and ensures the consistency of the display. So your images look exactly the same, time after time.

But accurate, reproducible color is just the first advantage of a Radius Color System. The second is accelerated performance that transforms your Macintosh into a color workstation.

Radius Color Systems are powered by the Radius QuickColor™ Graphics Engine. A 6 MIPS RISC processor that drives Macintosh QuickDraw routines, like window movement, text scrolling, fills and image displays, up to 600% faster. You have to see it to believe it.



Radius PrecisionColor Calibrator



Radius QuickColor Graphics Engine 6 MIPS RISC Processor

And thanks to the high resolution of Radius Color Displays, you always see a full two-page view. Your work is never cropped off at the sides or chopped off at the bottom. In addition, you can upgrade from an 8 to 16 to 24-bit Radius Color Display simply by adding video RAM to the display interface card.

No matter which Radius Color System you choose, you'll work with the only complete system that provides the performance of a professional workstation and unprecedented color accuracy.

So call 1-800-227-2795† for the name of the Radius Authorized

Reseller nearest you.

Because what you've just read is exactly what you'll get.

## radus

Intelligent Hardware™

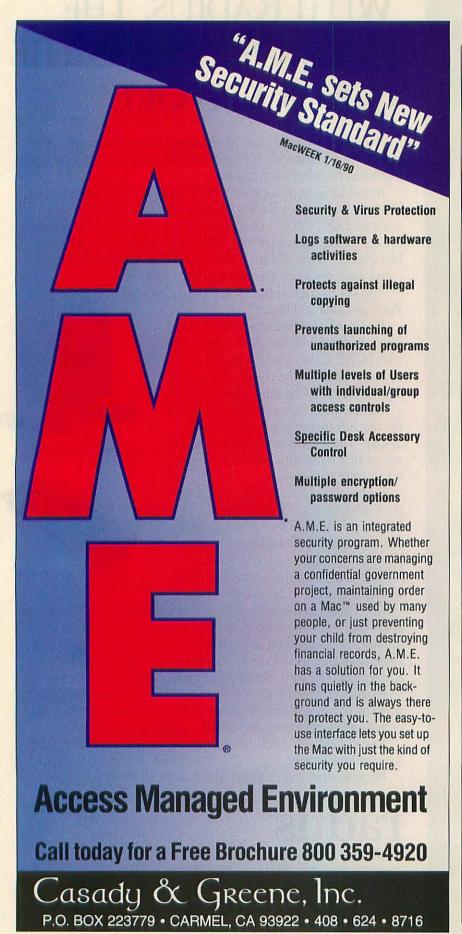
† If you live outside the continental United States, call 408-434-1010 for the name of a Radius International Distributor.

\*Pantone. Inc.'s check-standard trademark for color reproduction and color reproduction materials. Process color reproduction may not match PANTONE color standards. Refer to current PANTONE Color Publications for the accurate color. PANTONE Color simulations are only obtainable on this product when driven by qualified Pantone-licensed software packages. Contact your Radius Authorized Reseller for the current list of supported applications.

@Pantone, Inc. 1988.

©1990 Radius Inc. Radius, the Radius logo, Intelligent Hardware, Radius Color Display, Radius DirectColor, Radius PrecisionColor Calibrator and Radius QuickColor are trademarks or registered trademarks of Radius Inc. All other brand names or trademarks are the property of their respective holders.

Circle 178 on reader service card



Circle 16 on reader service card.

#### **MACWORLD**

#### ADVERTISING SALES

Vice President/Director of Advertising Sales
Patricia Navone (415/243-0505)

Western Advertising Manager William P. Peck (415/243-0505)

Senior Account Manager/No. California (San Francisco) Penny Rigby (415/243-0505) No. California (San Jose) Cheria la France

No. California (San Jose) Cherie La France (415/243-0505)

Northwest Regina T. Salaices (415/978-3155) Sales Associate Shannon Smith

So. California Paul Dudas (714/250-1307)
Southwest, Texas Cathi Tucker (714/250-1307)
Sales Associate Marsha Bowers

Midwest Shannon Dolan (312/827-4477) Sales Associate Sandy Mussato

Eastern Advertising Manager Bill Thompson (201/967-1350)

Mid-Atlantic Annette Bremer (201/967-1350)
New England Joan Flynn (508/879-0700)
Southeast Kathy Isaacs (404/394-0758)
Telemarketing Manager Beverly Schneider
(415/243-0505)

Macworld Catalog Carol Felde, Niki Stranz (415/978-3152; 415/978-3105)

Vice President/Marketing and Circulation
Daniel Orum

#### MARKETING

Marketing Associate/Reader Service Susan Carroll
Marketing Associate/Merchandising Lisa Espinoza
Marketing Associate/Communications
Kimberlee Luedee

Marketing Associate/Events Randy Schneiderman (415/243-0505)

#### CIRCULATION

Director of Circulation Lindsay Davidson Fulfillment Coordinator Evelyn Adenau Promotion Coordinator Leri Hitchcock Circulation Assistant Catherine Huchting Single-Copy Sales Director George Clark Single-Copy Sales Rep Martin Garchar

#### MARKET RESEARCH

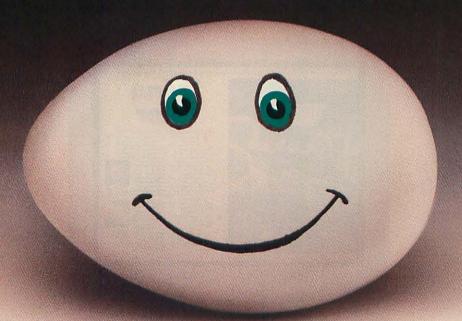
Director of Research Gary L. Rocchio Research Coordinator Guy Tasaka

#### ADMINISTRATION

Director of Finance Vicki Peilen
Corporate Business Manager Christina W. Spence
Accounting Manager Pat Murphy
Director of Human Resources Shelly Ginenthal
Information Systems Manager Walter J. Glegg

Founder David Bunnell
Founding Editor Andrew Fluegelman 1943–1985

## In a field of unfriendly communication interfaces,



## enter a new face.

Modems, wake up. Macintosh users take heart. MicroPhone II 3.0 is about to brighten your day.

Using Color Icons, Superior Text Editing and Custom Dialogs, MicroPhone II 3.0 lets you design your own

custom front ends. Suddenly, hostile remotes are on speaking terms. And clumsy chains of commands are reduced to effortless clicks and keystrokes. You communicate more easily than ever before.

Whether for mail, teleconferencing, on-line research or

bulletin boards, MicroPhone II 3.0 is helping everyone put on a happy face.





SOFTWARE VENTURES

2907 Claremont Avenue Suite 220 Berkeley CA 94705 Tel: 415-644-3232 In Canada, call 1-800-268-1220.

MicroPhone is a trademark of Software Ventures Corporation. Copyright © 1990 Software Ventures Corporation. Includes Dialoger for MicroPhone II.

Available at your local Businessland, Egghead, Computer Craft, Computer Factory and Software Spectrum.

Circle 48 on reader service card

## Look.



Only SuperMac<sup>™</sup>can dramatically enhance the look and feel of your Macintosh. We do just that with the newest, most impressive member of our family—our 21-inch Color Two Page Display. ™

We redefine the concept of a two page display with the first 1152 × 870 color display that's Apple\*standard WYSIWYG.

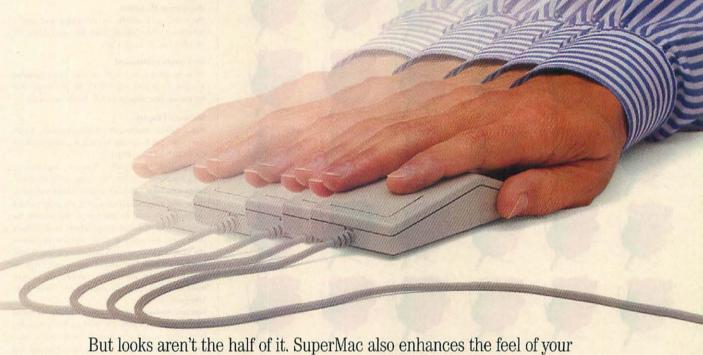
And we apply our vast color graphics expertise to our gray scale and monochrome displays, too. With our Platinum Two Page Display™and our 19" Platinum Display,™ we perfectly mirror the subtle details of the actual printed page: Paper whites. Crisp grays. And razor sharp focus, even at the edges.



SuperMac's display system family includes the new Color Two Page Display and Platinum Two Page Display; the 19- and 16-inch Color Trinitrons; and the 19-inch Color, and 19" Platinum Displays.

SuperMac's Two Page Displays are the latest members of an influential family of sophisticated graphics systems. Each complete with a high-contrast antiglare panel and a fast 75Hz flicker free refresh rate. Each perfect for any size system or budget. From our 19- and 16-inch color Trinitrons™ to our high performance 19″ Color and Platinum Displays.





But looks aren't the half of it. SuperMac also enhances the feel of your Macintosh with the most versatile 8- and 24-bit color graphics cards and superior QuickDraw™acceleration.

accele ance v

SuperMack 24- and 8-bit graphics family includes the new accelerated Spectrum/8 PDQ and Spectrum/24 PDQ for large screens; the economical ColorCard/24 and Graphics Accelerator™ Other family members include the Spectrum/8 Series III, accelerated Spectrum/84 Series III, ColorCard/8™ Monochrome Card/™ and other specialty cards.

Our new large screen color cards integrate QuickDraw acceleration on a single card, and optimize Macintosh performance within *every* QuickDraw application, not just a few. Best of

all, they mix and match with more displays than any other card — including Apple and a host of other industry standard displays.

Choose from our Spectrum/8™PDQ for fast 8-bit performance, or our Spectrum/24™PDQ for a blazing 16.7 million colors—as many as your eye can distinguish. Or select any one of our extensive family of high performance, 24- and 8-bit graphics systems: displays, boards, and soft-

ware. Including our ColorCard/24™ with optional acceleration for 13" displays.

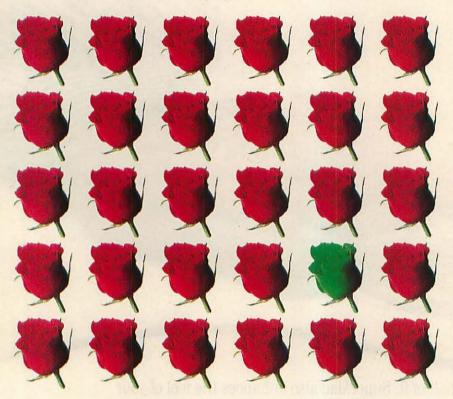
So insist on the superior quality you've come to expect from SuperMac.

The best look. The best feel. The best performance. And the best value. Ask your dealer for a SuperMac graphics system.



Circle 166 on reader service card

## If your statistical software is limiting your vision,



### who knows what you might be missing?

Most statistics software makes you look at your data through rose-colored glasses. With procedures so rigid and distorting, you're blinded to the odd exception or hidden relationship.

But now there's an eye-opening solution: Data Desk® for the Macintosh. The only software that carries out the vision of Cornell Professor Paul Velleman, modern pioneer of Exploratory Data Analysis.

Data Desk lets you view your data from graphic new perspectives. Without any preconceived notions. So you find out what you need to know-not just what your software lets you.

For your free Data Desk test flight, call 1-800-323-5423. And see a spectacle that'll really Data Desk.

Odesta Corporation, 4084 Commercial Avenue, Northbrook, IL 60062. Ad 11DD/060190

1990 Odesta Corp. Data Desk is a registered trademark of Data Description, Inc. Macintosh is a registered trademark of Apple Computer, Inc.

Circle 162 on reader service card.

#### MACWORLD

#### HOW TO CONTACT MACWORLD

#### **Subscription Services**

For subscription service questions, call 800/234-1038, 800/525-0643, or 303/447-9330, or write Subscriber Services, P.O. Box 54529, Boulder, CO 80322-4529. To place orders, call 800/288-6848.

#### Macworld in Microform

Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346, 313/761-4700.

#### **Back Issues of Macworld**

Write to: Back Issues of Macworld, 144 Townsend St., San Francisco, CA 94107; \$6 per issue (\$20) overseas). Prepayment in U.S. funds necessary.

#### Macworld Editorial

Mail or Courier Macworld Communications, Editorial Dept., 5th floor, 501 Second St., San Francisco, CA 94107; 415/243-0505.

AppleLink: Macworld1 Connect: Macworld1 CompuServe: 70370, 702 Fax: 415/442-0766

Letters to the Editor All your written comments, questions, and suggestions regarding any aspect of the magazine are read by our editor. We reserve the right to edit all submissions; letters must include your name and address. Direct all correspondence (by mail or electronically) to: Letters to the Editor. Questions and Quick Tips Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to: Quick Tips, Lon Poole.

Consumer Advocate Been burned? Really steamed? Direct your concerns (by mail or electronically) to: Conspicuous Consumer, Deborah Branscum.

New Products and Updates Direct press releases and product announcements (by mail or electronically), and shrink-wrapped software upgrades (by mail or courier) to: New Products Editor.

Editorial Calendars For a copy of Macworld's editorial calendar, direct requests (by mail) to: General Information, Editorial Dept.

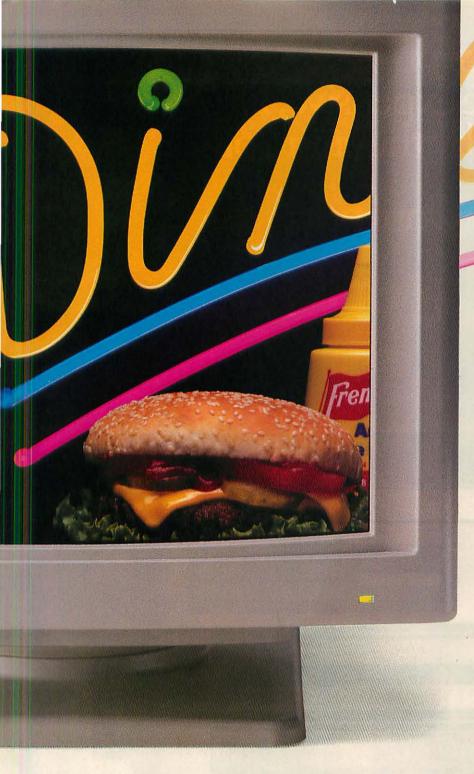
Reprints and Permissions For written permission to quote or reproduce material from Macworld, direct requests (by mail) to: Reprints and Permissions, Editorial Dept.

Writing for Macworld Please do not send us unsolicited manuscripts. If you're interested in writing for Macworld, send a stamped, self-addressed envelope along with a request for our writer's guidelines. Direct (by mail) to: Writer's Guidelines, Edi-

POSTMASTER: Send address changes to Macworld, P.O. Box 54529. Boulder, CO 80325-4529. For dealer inquiries, call 800/621-5461, in California 800/521-8455. Editorial and business of fices: 501 Second St., San Francisco, CA 94107, 415/243-0505. Macworld is a publication of Macworld Communications, Inc. Macworld is an independent journal not affiliated with Apple Computer, Inc. APPLE, the APPLE LOGO, MAC, MACINTOSH, and MACWORLD are registered trademarks and MACLETTER is a trademark of Apple Computer, Inc. Printed in the United States of America, Copyright 1990 Macworld Communications, Inc. All rights reserved. Mactworld is a member of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 130 computer publications in more than 40 major countries. Nineteen mill'so people read one or more IDG Communications publications cach month.







## Introducing Color That Out-Neons Neon.

Amazing, isn't it? The monitor image actually out-shines the real thing. Introducing two of the brightest Macintosh-compatible color monitors ever made: the Seiko Instruments 14" CM-1445, and 20" CM-2050.

Our new Trinitron\* monitors brighten your ideas with a blazing 100 NITs\* of color. That's a full 30 NITs brighter than an Apple\* MAC II\* RGB monitor's maximum of 70 NITs. Which means with us, your colors can be 43% brighter. Your fire engine reds can be 43% hotter classical black 42% injury and warmen to the start classical black 42% injury and warmen to the start classical black 42% injury and warmen to the start classical black 42% injury and warmen to the start classical black 42% injury and warmen to the start classical black 42% injury and warmen to the start classical black 42% injury and warmen to the start classical black 42% injury and warmen to the start classical black 42% injury and the start classical black 42%

Your fire engine reds can be 43% hotter, glacier blues 43% icier, and sunshine yellows can almost give you a tan. In fact, with color brighter than neon in 16 million possible shades, anything you can imagine, you can see. And every eye-popping pixel will be razor sharp because of our high resolution Trinitron tubes.

So if you're looking for color, just use your eyes. You'll see that Seiko Instruments is the brightest choice you can make.

Call 1-800-888-0817 Ext. 104M for information and an Authorized Dealer.





PostScript laser printers used to be expensive, large and shared by the entire office.

Until now.



### microLaser™ from Texas Instruments: the affordable PostScript printer you can call your own.

Finally, for less than \$3,150\*, you can have a true Adobe® PostScript laser printer right at your own desk. TI introduces its new microLaser — the perfect partner for your Macintosh®.

#### Small size. Lots of value.

When you place this printer next to your Mac, you'll be impressed by its small size and compact design. At only 13.4 inches wide and 14.2 inches deep, microLaser may be the small kid on the block, but it packs plenty of punch. This six-page-per-minute printer takes full advantage of virtually all of the software

that runs on your Macintosh. That's because it uses the Adobe PostScript language, offers 35 PostScript typefaces, 1.5 Mb of memory and an AppleTalk® interface.

If you also use MS-DOS® Computers, you can switch between the PostScript language and standard HP LaserJet® Series II emulation easily without turning off the printer.

#### True Adobe PostScript.

Because microLaser features the PostScript language, you can print fonts in a variety of typestyles, sizes, and orientations by scaling and rotating them to meet your exact specifications.

The PostScript language also gives

you more graphics power so you can print precise lines and smooth curves. Integrating text and graphics is easy, and the microLaser can print even your most sophisticated page layouts and illustrations.

What's more, the PostScript language is the industry standard for higher resolution output devices. So you can proof your documents on the microLaser, then print on any typesetter with PostScript capability without recreating the document.

Capabilities that grow as your needs grow.

One of the best things about microLaser is that you only buy what you need. Memory is upgradeable in 1 Mb incre-

ments up to a total of 4.5 Mb, and you can upgrade it yourself, without tools or technicians. All you have to do to get additional fonts is download through software or plug optional micro-Cartridges into two credit-card size slots.

#### Superior paper handling.

Part of what makes microLaser a truly personal, desktop laser printer that takes up so little room is its paper drawer, which slides inside. Because microLaser holds 250 sheets standard (it holds 500 when you add an optional paper drawer), you spend less time refilling paper and more time creating superb-looking documents.

This printer also handles a variety of paper sizes and types — from letter, legal, and executive to transparencies, labels and envelopes. For those times when you're facing a large mail merge task, just plug in an optional envelope feeder to alternate between letters and envelopes.

#### Your own PostScript printer is a call away.

To find out more about how you can have affordable PostScript printing for your Macintosh, call TI today. 1-800-527-3500.

\*TI suggested retail price of microLaser PS with an AppleTalk interface.



#### The New WriteNow Version 2.2.

## Still Easy. Still Fast. And Still the Right Choice...

#### ... But Now For Even More Reasons!

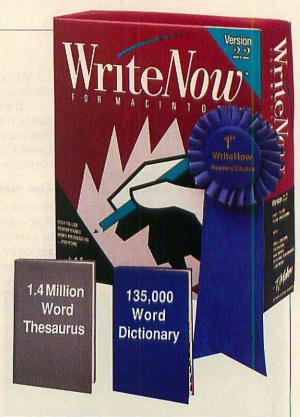
1.4 Million-Word Thesaurus How about 1.4 million new reasons? WriteNow now includes the Proximity WordMaster™ Thesaurus, containing 1.4 million synonyms, antonyms, compared, contrasted, and related word responses at your fingertips—it's the biggest in the Macintosh world!

135,000-Word Spelling Checker How about another 135,000 great new reasons? We've increased the size of our spelling checker to 135,000 words, making it the largest of any Macintosh word processor as well.

**Direct Word 3.0 and Word 4.0 Compatibility** Maybe you just need **3.0 or 4.0 good reasons?** WriteNow is directly compatible with Microsoft Word 3.0 and Microsoft Word 4.0 documents.

Over a Dozen New Features & Usability Enhancements Or how about over a dozen new features and usability enhancements, like menu fonts, ruler guides, automatic window tiling & stacking, date formatting, powerful new format accelerators, direct input of font size, pre-designed mailing label templates for popular label sizes, and more.

The Word Processor of Choice in the Macintosh World Or how about just one really important reason: When you ask industry critics which word processor they use day-to-day, the answer is always the same: WriteNow. Still the word processor of choice in the Macintosh world.





#### Reviews

6 WriteNow is the definitive Macintosh word processor. It's easy to use, powerful, and comfortable... Highly recommended. —John Dvorak, Industry Columnist

[WriteNow] might be The Best Program I'd Ever Used. On any computer—it's the fastest Macintosh word processor I've ever seen. —JIM SEYMOUR, MACUSER MAGAZINE

Even if WriteNow is your first Mac application, you'll be up and running in no time.

We rate ease of learning excellent.

—INFOWORLD MAGAZINE

#### Awards

1989 Editors' Choice Award,
'Best New Word Processor'—MACUSER

1989 Readers' Choice Award,
'Best Word Processor'—MACAZINE

#1 Rated Word Processor in Macintosh 'PC Week Poll of Corporate Satisfaction.'

-PC WEEK MAGAZINE

#### Comparison of Leading Word Processors

	WriteNow 2.2	MacWrite II	Word	Works
Actual disk space needed:	(2) 800K	Hard disk	Hard disk	Hard disk
Thesaurus:	1.4 million	220,000	220,000	No
Spell Checker:	135,000	100,000	130,000	60,000
Mail Merge:	Yes	Yes	Yes	Yes
Format Accelerators:	Yes	No	Yes	No
Multiple Header/Footers:	Yes	No	Yes	No
Extensive Undo:	Yes	No	No	No
Retail Price:	\$195	\$249.95	\$395	\$295

#### For more information...

Registered users will receive WriteNow 2.2 upgrade information in the mail. Nonregistered users should call or write for details.

T/Maker Company 1390 Villa Street Mountain View, CA 94041

Tel: (415) 962-0195 Fax: (415) 962-0201

D 1900 T/Maker Company. All rights reserved. The following are registered and surregistered trademarks of the companies listed: WriteNow is a trademark of T/Maker Company; Macintosh, Apple Computer, Inc., MacWrite, Claris Corporation.

T/Maker.



## MACBULLETIN

#### **Time for Tempo**

Affinity is designing some extensions for its macro builder, Tempo II, and will probably call the completed package Tempo+ Tools. The additions include Tempo+ Menu, an INIT that creates a special menu for local and universal Tempo macros, and Tempo+ Viewer, an application that lists all the steps of a macro to simplify debugging macros and setting up branches (an editor will be released eventually). The new package also has improved support for externals, and it comes with 22 externals that perform such functions as reading the name of a window and using it to branch to another macro, or triggering an action based on a bitmap such as an icon. The new package lists for \$29.95 and is available to registered Tempo owners only. For more information, contact Affinity at 303/442-4840.

#### **Programmers' Triptych**

Paracomp and Aladdin Systems have both recently announced programming utilities, and Symantec has a new version of Think Pascal. Paracomp's \$495 C Math Solvers is a collection of Think C 3.0-compatible math routines adapted from FORTRAN libraries on other computers. An MPW C version is also under development. Aladdin's \$99.95 Programmer's Assistants is a collection of six desk accessories that perform specific tasks, such as calculating 68000 instruction cycles and displaying the values of windows and system variables. Think Pascal version 3.0 is a fully object-oriented implementation of Pascal, with a special class-browser and tools to simplify the transition from procedural programming to objectoriented programming. Think Pascal 3.0 lists for \$249. For more information, contact Paracomp at 415/543-3848; Aladdin Systems at 408/685-9175; and Symantec at 408/253-9600.

#### **Lotus, Novell Announce Merger**

In a surprise announcement, Lotus Development Corporation of Cambridge, Massachusetts, has agreed to acquire Provo, Utah-based Novell. Under the terms of the agreement, Novell—the developer of Netware—will become a wholly owned subsidiary of Lotus. The two companies will combine their boards of directors. Jim Manzi will continue as chairman, president, and CEO of Lotus; Ray Noorda will become vice chairman of Lotus and continue as Novell's CEO. The deal, expected to become final in July, will make Lotus the world's largest

personal-computer software vendor, surpassing Microsoft.

#### **Reams on ROMs**

The latest addition to the CD ROM market is Grolier's 1990 version of the New Grolier Electronic Encyclopedia. The new version contains the entire 1990 edition of *Grolier's Academic American Encyclopedia* with color images. Also on compact disc is Highlighted Data's CD ROM edition of *Webster's Ninth New Collegiate Dictionary*. The dictionary includes illustrations and digitized pronunciations of each word. The list price for the New Grolier Electronic Encyclopedia is \$395. For more information, contact Grolier at 800/356-5590. The list price for the CD ROM version of *Webster's Ninth New Collegiate Dictionary* is \$199.95. For more information, contact Highlighted Data at 703/533-1939.

#### Rodime Ships 330MB and 650MB Hard Disks

Rodime Systems has begun shipping two new high-capacity hard drives: the Cobra 330e and Cobra 650e. The Cobra 330e lists for \$3999 and has an average access time of 14.5ms. The Cobra 650e lists for \$5899 and has an average access time of 16.6ms. For more information, call Rodime at 407/994-5585.

#### **Farallon Opens More Windows**

Timbuktu, a utility that lets users reach across a network and observe or control another Macintosh, is adding the ability to observe or control more than one other Mac at a time. In version 3.1, each remote machine's desktop appears to the guest in a separate, resizable, movable window. Farallon says the new version transfers files seven times faster than version 3.0. Farallon is also shipping its Remote/WakeUp cable, which will allow a user to call in via modem and boot any ADB Mac. For more information, call 415/596-9100.

#### Casady & Greene on the Scene

Casady & Greene is preparing a truckload of new products, including a general utilities package. Quick-Tools is a collection of five utilities including Sunset, a screen saver; Dialog Power, similar to CE Software's Dialog Keys; a screen grabber called Snipper; PowerStrip, for launching files and applications; and Functionality, which makes the function keys on the Apple Extended Keyboard function. QuickDex is (continues)

getting scroll bars and multiple-keyword search capability, and its companion PrintDex is getting a major overhaul including sorting, text parsing, three-level-deep selecting, simplified importing, and greatly improved print formatting. Also coming: two new games (one by Patrick Buckland, the author of Crystal Quest) and lots of new fonts, including two music fonts and a few Cyrillic fonts. Fonts will come with both Type 1 and Type 3 in the box. For more information, call Casady & Greene at 408/624-8716.

#### **Fastback Is Back**

Fastback II 2.1 sports a typical backup rate that is up to three times faster than version 2.0, according to its maker, Fifth Generation Systems. The new version also uses half as many disks for a backup. Users can select files to back up by their size, date, and even the color of their icons. In addition, Fifth Generation is entering the hardware business with the FB120, an MCD II–format cartridge tape backup system that the company says can store over 200MB at a data-transfer rate of more than 3MB per minute. Fastback II 2.1 lists for \$189. For more information, contact Fifth Generation Systems at 800/873-4384.

#### Compute While You Sleep

Simple Software has introduced NightLife 1.2, an application that can launch and operate other programs while the user is away from the computer. NightLife, available in the latest version for \$79.95, can open an application at a preset time and initiate macros made by applications or macro generators including MacroMaker, QuicKeys, or Tempo II. For more information, contact Simple Software at 415/381-2650.

#### **Apple, KPMG Peat Marwick Form Strategic Alliance**

Apple and KPMG Peat Marwick have formed a strategic alliance to assist companies implementing executive information systems and decision support systems (EIS/DSS) on Macs. Called Exis (Executive Integration Services), the venture will provide consulting and systems integration services, including project management, systems planning and analysis, system configuration, traning, and support. Exis will operate as a business unit of KPMG, Peat Marwick's Management Consulting Practice. For more information, contact KPMG Peat Marwick/Exis at 415/354-1412.

#### The Expandable SAM

Version 2.0 of Symantec Anti-Virus for Macintosh (SAM) can be modified by end users to add protection against new viruses. Symantec will maintain an automated telephone hot line to provide codes that users can simply type into a dialog box, much like adding words to a spelling checker. Security features have also been expanded so that network administrators can disable the Learn button and lock SAM's configuration. SAM 2.0 can keep a list of all

alerts and can scan Syquest platters at insertion. List price remains \$99.95. For more information, contact Symantec at 408/253-9600.

#### Claris Upgrades CAD

The new Claris CAD pushes mind-machine symbiosis several brainwaves into the future with Graphic Guide, a system that makes intelligent guesses about a user's next action, based on mouse speed, direction, and position. Version 2.0 of the 2-D package has about 100 new features, including enhanced dimensioning capability, selection filters, and object-attribute exporting for project management and cost estimates, and will list for \$899. For more information, call Claris at 408/987-7000.

#### The Talking Mailbox

Microsoft Mail is sporting a new talking envelope. Using a \$149 version of the MacRecorder that Farallon stripped down for digitizing speech, MS Mail users can affix messages with spoken comments. The interface lets users play back and change messages before sending them, and reply to or forward voice messages like text messages. Microsoft is at 206/882-8080.

#### Strata Takes Flight

Strata has released StrataFlight, a \$189 add-on utility for Strata's 3-D rendering program, StrataVision. StrataFlight can animate 32-bit color images composed in StrataVision. Key images created with Strata-Vision's 3-D camera can be animated using Strata-Flight's tweening function to fill in the intervening frames. The animations can then be exported into MacroMind Director. For more information, contact Strata at 801/628-5218.

#### Scitex Visionary Expanded

Scitex's Mac software used for preparing QuarkXPress files for Scitex photo editing and color correction has been upgraded to match the features of version 3.0 of QuarkXPress, adding support for text rotation, bleeds, and the use of multiple templates in a document, as well as support for Quark's new library feature. Visionary 3.0 also adds such Scitex features as degrade creation, black trapping and mask substitution, and scanning instructions. For more information, contact Scitex at 617/275-5150.

#### **Apple Files against Mac Clone**

In the latest skirmish of its anticlone wars, Apple says it has filed a complaint against five Akkord Technology employees. Akkord makes a Macintosh clone. The criminal complaint, which has resulted in police raids on the Taiwanese premises of Akkord and Flive Computer Corporation, alleges that the five employees illegally copied the code contained in Apple ROM chips. At press time, the Taiwanese police were considering indictments, according to Apple.

## The <u>Ultimate</u> Desk Accessory.

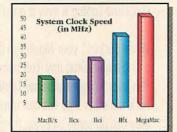


e bet you're already figuring how you can justify this one — even at \$78,000! Fact is, most Mac users are desperate for anything that can enhance the performance of their systems.

#### Mac Dreams Do Come True.

Here's good news for all you despairing Mac users. Our new MegaMac™ doesn't really cost \$78,000 — or anywhere near

it. But hook it up to your Mac II, IIx, IIcx, IIci or IIfx and you'll be surprised that it doesn't. That's because with a MegaMac installed, your Macintosh\* becomes a 50MHz 'micro-mainframe' with system performance that will literally astonish you. The MegaMac even runs faster than Apple's new 40MHz Macintosh IIfx. In



**CPU Performance Comparison** 

new 40MHz Macintosh IIfx. In fact, the MegaMac rivals systems costing in the six figure range.

#### It's Even User-Friendly.

If you're thinking the MegaMac is just another accelerator board, think again. It's a full-featured, high-powered *CPU Performance Extender* — with its own memory, microprocessor, power supply and support circuitry. Unlike ordinary accelerator boards that sometimes require expensive and tricky CPU board

modifications, the MegaMac plugs into your Macintosh® via a NuBus accessory card. No soldering, no Ph.D. in electronics, no complicated software to install. Just plug and go!

The secret to MegaMac's incredible performance is its proprietary design. A 68030 50MHz microprocessor coupled with 64K of 12 nanosecond, write-through™ caching and on-board, high speed dynamic RAM (up to 64 megabytes) provides blistering fast program execution. The bottom line? In a word, p-r-o-d-u-c-t-i-v-i-t-y...gains greater than you ever imagined.

#### NewCo - Nobody Does It Better.

Of course, no matter how innovative a new product might be, it's no better than the company that stands behind it. That's why we back every MegaMac with a two-year factory warranty and a 31-day 'try it' buy it' satisfaction guarantee. We can afford to back our products so well because we've been making microcomputer products even longer than Apple — nearly 18 years now! You simply won't find another vendor with more experience than NewCo Technology.

Worried that you can't afford a \$78,000 desk accessory? Well, here's our offer. Call us at **1-800-662-9005** with your justification for owning a NewCo MegaMac™. If it's a good one,

a <u>really</u> good one, we'll knock off fifty, sixty — maybe seventy thousand dollars.

NewCo Technology, Inc.

@ 1990 NewCo Technology, Inc. Specifications subject to change. Macintosh is a trademark of Apple Computer, Inc. MegaMac, Write-Through and NewCo are trademarks of NewCo Technology, Inc.



### Good

The Macintosh® SE and Macintosh Plus from Apple® do just about anything that a *good* business computer can do. Both are capable of running thousands of *powerful* software applications, including some applications that no other personal computer can handle.

But what's really unique about the Macintosh SE and Plus is the world's most friendly user interface. End of story.

So Macintosh owners have the ability to do more things quickly and easily — which translates into greater productivity at work — or anywhere else for that matter.

## BETTER

Now all Macintosh SE and Macintosh Plus owners have the opportunity to take a fundamentally *good* idea — and make it even *better*.

Introducing the Outbound™ Laptop System, no small idea when it comes to expanding the power of your Macintosh SE or Macintosh Plus. Sharing your most essential business information between your Macintosh desktop and your Outbound Laptop is only a *point and click* away.

When docked\*, your Macintosh and Outbound function as a single unit. Drag any icon from your Macintosh SE or Plus over to your Outbound Laptop System. Or take files back the other way without using a single utility. Together they can do some amazing things to make your Macintosh experience — twice as rewarding.

Like getting the job done in half the time by doubling operating speed; or making your work all the more visible with the addition of the Outbound's backlit LCD — which works with your Macintosh display. With the increase in system memory and storage capacity, you get to expand your desktop that much further.

But to properly size up the Outbound's real potential requires a slightly more detached point of view. On its own, the Outbound Laptop gives you the freedom to express yourself while on the road — becoming a standalone Laptop and running all of your favorite Macintosh applications. And because of Outbound's innovative silicon disk — your software will perform at a recognizably quicker pace, which is especially important if you happen to be on the fast track.

Weighing in at just over 9 pounds (battery included), the Outbound Laptop combines a sleek, compact design with all of your favorite Macintosh features — yet it's small enough to use in the crowded coach section of an airplane.

So if you work under slightly confined conditions — on a train or even in rush hour traffic — the Outbound Laptop is the best way to get the job done.

## BEST



For more information on how the Outbound Laptop System can provide you with power to go, contact one of our authorized resellers or Call: 800-444-4607

ext. 400

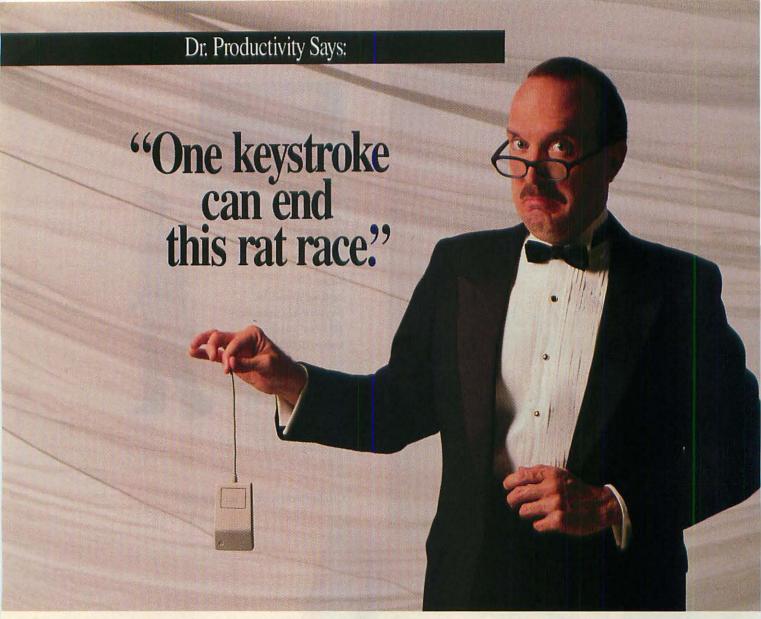
Write: Outbound Systems, Inc. (Formerly Wallaby Systems, Inc.) **4840 Pearl East Circle** Boulder, CO 80301

\* The Outbound Laptop requires that an authorized Outbound reseller relocate the ROMs from your existing Macintosh SE or Macintosh Plus. Your Macintosh SE and Plus are fully operational as long as the Outbound Laptop is dacked.

The Outbound name and logo are registered trademarks of Outbound Systems, Inc. Apple and Macintosh are registered trademarks of Apple Computer, Inc. @1990 Outbound Systems. All rights reserved.

Circle 75 on reader service card





#### "If you want finger exercise, play the piano. If you want productivity, use QuicKeys."

"Want to know why users and reviewers love QuicKeys so much? Because an active computer user will stroke the keys over 1.5 million times – and race the mouse endless miles each year. QuicKeys is a fast, simple way to eliminate the *boring*, repetitive keystrokes you do over and over – and delete hours of tedious menu yanking from your life every year.

Sure, you increase productivity and save time. Big deal. The *real* value is all the little shortcuts that make computing so much more tolerable."

### "QuicKeys makes your Mac do the walking."

"It lets one keystroke eliminate a lot of mousing around. Have one QuicKey

launch a program or set up a page. Define keys that enter entire paragraphs, or insert addresses, names or formulas. Anything you do repetitively, you can do in less time, with less aggravation. A stroke of genius."

#### "Reviewers have spared no keystrokes in praise of QuicKeys."

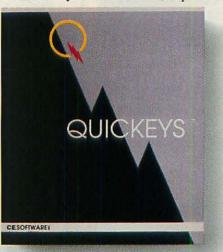
\*\*\*

"MacUser gave QuicKeys a four-mouse rating and an Editor's Choice Award. Robert

Wiggins, of MacUser; says 'It could send your mouse to retirement.' MacWorld named QuicKeys as one of the Goodies You Can't Be Without. MacGuide readers awarded it the Golden Gavel. Byte says, 'QuicKeys is right up there with sliced bread, the Great Pyramid of Cheops, and other wonders.' The raves go on and on."

#### "Go to a dealer and try it."

For the Macintosh. Suggested retail price, Version 1.2: \$99.95. For free literature and Where To Buy: 1-800-523-7638, Dept CE 33.



**CE**SOFTWARE?

CE Software, 1854 Fuller Road, P.O. Box 65580, West Des Moines, IA 50265 USA. Dr. Productivity and QuicKeys are trademarks of CE Software, Inc. All other registered and unregistered trademarks are the sole property of their respective companies.

### My Turn

#### AN OBSERVER ATTEMPTS TO SHED LIGHT ON RECENT EVENTS AT APPLE

BY JERRY BORRELL

t all started with sporadic reports in the newspapers about an expected decline in earnings at Apple. Then John Sculley missed a round of meetings with financial analysts. Rumors began to circulate that a low-cost Macintosh was nowhere

on the horizon. News followed about massive layoffs at the company's headquarters. Next came a spate of frontpage stories about Allan Loren, who was leaving Apple. At the same time Michael Spindler (formerly president of Apple Europe) was promoted to chief operating officer. The Wall Street Journal followed up with a report that Jean-Louis Gassée had resigned from Apple. It was widely discussed that John Sculley intended to head up the group formerly directed by Gassée. Sculley began to receive some of the worst press in Apple's history. This is but the latest chapter in the ongoing saga of the all-too-public growth pains

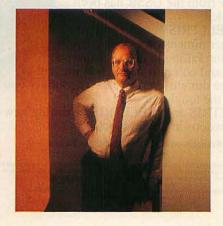
of a small company that is getting big.

#### What Started All of This?

Good question, since Apple is selling more Macintosh computers than it ever has. Part of the problem is that someone estimated, and someone else accepted the estimates, that Apple was going to sell about 40 percent more computers in the fall and winter of 1989 than it actually sold. And based upon those estimates, money was spent and projects were initiated. Estimates that flew in the face of facts, such as the real limits on the number of Macs that could be made in the company's manufacturing plants.

Part of the problem was that the number of employees at Apple had crept up to nearly 15,000. Part of the problem was Allan Loren's inability to wrest control of, and give direction to, Apple's marketing and sales groups. Part of the problem was caused by those plans that Loren was able to implement. Test-drive a Mac, a campaign Apple advertised beginning in November of 1989, produced results as lackluster this time as it had the first time it was tried a couple of years ago. Worse, Apple heavily promoted a campaign of rebates that provided consumers with cash for machines they probably would have bought without any inducement.

Part of the problem was caused by John Sculley's personnel choices—like his choice of Loren (not to mention the crowd of executives that preceded him), a career insurance executive, to head up a computer company's product marketing. Part of the problem was caused by Sculley's reported inability to allow his executives to run their own departments-a notorious tendency to reduce his direct reports to supernumerary status by going around them to get their staffs to make decisions that he liked. Part of the problem was that John Sculley preannounced the low-cost Macintosh by at least a year and a half. For the first time in his tenure Sculley had seriously miscalculated his actions, which caused many to repeat a popular saying at Apple, "Apple leaks from the top." And a large part of the prob-



lem was caused by the fact that the press loves a goat, and so it heaped negative attention on Sculley for sins not all of his own making.

#### Missing: The Low-Cost Mac

The surprising truth is that there are several versions of low-cost Macs on the drawing boards or in prototype stages at Apple. The not-so-surprising truth is that Apple, during the process of designing both color and monochrome versions of low-cost machines, is learning a lot about what can and cannot be done.

At the same time, technology is changing—faster microprocessors are always just over the horizon—waiting on a successful yield rate from a silicon manufacturer. Disk drive technology is fluid. You have self-appointed critics (like me) out there in the press asking Apple to pull off technical miracles, such as adding small erasable optical drives to their machines. Apple's increasing level of sophistication in integrated circuit and subsystem design (the chips that are stuffed onto a printed circuit board) dictates (continues)

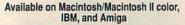
Now that Glasnost has redefined East-West relationships, Spectrum HoloByte brings you a new way to think about Soviet blocks.

First came TETRIS™, the game of fast thinking and quick reflexes. But just when you thought you had mastered TETRIS, the latest mind teaser from the USSR has been revealed.

WELLTRIS™ takes you into another dimension as you attempt to position falling blocks and shapes in rows and columns on the bottom grid of a three dimensional "well". The longer you play, the tougher it gets!

TETRIS and WELLTRIS. Exciting new

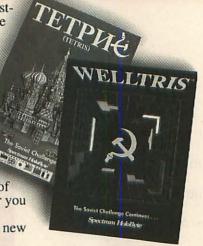
dimensions in Soviet blocks!



Tetraci 1887 Azadem/Soft-ELORG. Tetra copyright and trademak iclamed to Arcomeda Software Limited and sub-icom SPHERE, Inc. Original concept by Alexey Patroco. Original design and program by Walen Garaninov Weltera 51 1989 Dok-rights reserved. Licensed to Builet Proof Software. Advantion and modification by PRIFIEE Inc. by permission of BPS Original concept and design by Alexey Patrone.

Welters is a trademark of Builet Proof Software. Spectrum HotoRyle is a trademark of PHERE Inc.

Other products are trademarks of their respective holders.



Spectrum HoloByte

A division of SPHERE, Inc. 2061 Challenger Drive, Alameda, CA 94501 (415) 522 - 0107

ARCHIVING & BACKUP SOFTWARE

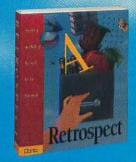


#### To Go Forward You Must Backup

On the Macintosh, creation and storage go hand-in-hand. You create. Then you store. Pretty soon, your hard disk is full of files--each one vulnerable to a hard disk crash. Retrospect will protect your creativity. And offers more than any

encryption, and full file selection. Run it automatically with a built-in calendar.

Retrospect. The Best Backup for Your Creativity.





CALL OR FAX

CALL: (415) 849-0293 FAX: (415) 849-1708

Circle 259 on reader service card.

that the company think out its designs rather than slapping integrated circuits onto a card to get another machine out the door.

Then there is the shifting nature of system software-which has its own impact on the functional requirements for new CPUs the company will produce. Finally, the company's design mandate requires it to produce aesthetically pleasing machines. To do that, Apple runs sophisticated models on its Cray computer, mills molds out of solid steel, and does tests of how materials will look when they are produced by the mold. In short, as one company executive reported in an obvious jab at Sculley, "We're not producing soda pop here."

Add to this the pressure for Sculley to deliver on his promise of a lowcost machine. In fact, being in the position of having to announce the most expensive machine Apple has ever produced, the Mac IIfx, Sculley must have felt as if the company's leaders on the technology side were letting him down.

#### French Psyche, Meet New York Push

All of which set up an increasing friction between John Sculley and Jean-Louis Gassée. Proud, egocentric, charismatic Frenchman (who had cultivated many friends in the press) meets high-strung, brilliant, cold marketing wizard (whose press coverage is strewn with photos of multimilliondollar mansions and Malcolm Forbes junkets). Use pressure, confine in tight space, mix thoroughly, and have the ghost of Steve Jobs wandering the halls at night.

So Gassée is gone and John Sculley is going to (by many accounts) head up product development in his place. Great! Take a legendary marketeer and give him the visionary role, in charge of that section of Apple Computer that has exhibited remarkable stability over the last four years. Now take Michael Spindler—the best-qualified executive (years of experience at Siemens, DEC, Intel, and Apple) Apple has ever had at that level of the company-make him COO, load him up with too much responsibility (Ich bin overworked), mix vigorously, and serve hot.

Stay tuned.

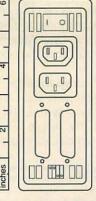
## REPORTS INDICATE A POWERFUL NEW WAVE WILL SOON ENGULF THE COUNTRY



#### **Tsunami** drives from La Cie

"La Cie gives your hard disks a Silverlining." - MacWeek 1990

- National onsite service by TRW
- 20-210 megabytes
- · Seek times as low as 15 ms
- Toll-free technical support
- Portable, approximately 3 lbs.
- Silverlining included
- Up to five year warranty



POWER

CONVENIENCE OUTLET

110-240V AUTO SELECT POWER ENTRY

SCSI CONNECTORS

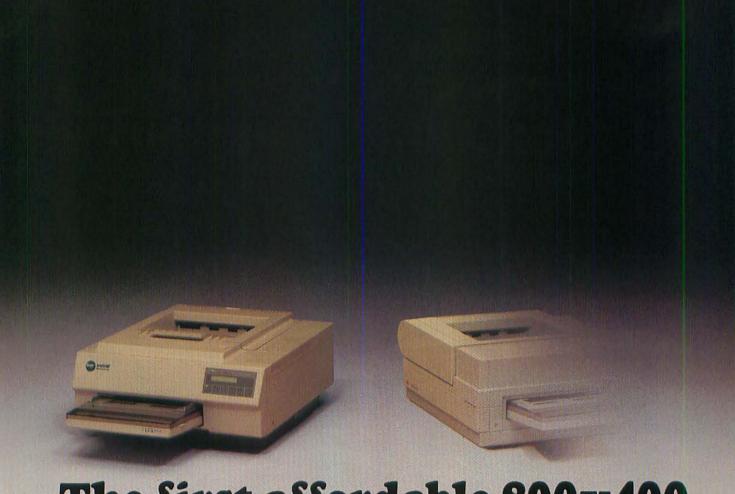
TERMINATION & SCSI ID SWITCH

"La Cie offers the leading combination of software and performance." - MacWorld 1990

Call (800) 999-0143 for your free Tsunami information kit. Dealer inquiries welcome. International or U.S. call (503) 684-0143. Fax: (503) 624-0919

14 Cie

Circle 197 on reader service card



### The first affordable 800x400 PostScript laser printer.

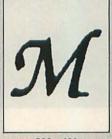
Until now, you had a choice: compromise your graphic standards with a 300 x 300 laser, or compromise your finances with a higher resolution printer.

Now there's the NewGen TurboPS/400 with a standard printing resolution of 400 x 400 dpi. That's almost twice the resolution of standard 300 dpi printers - at about the same price.

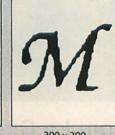
If you need even higher resolution, you can upgrade to 800 x 400 dpi with our resolution upgrade kit. You'll get the resolution you need to print fine-lined graphics and smooth fonts, and save time and money by printing your own masters. And best of all, you can get 800 x 400 resolution at about half the cost of high-priced imagesetters.

No wonder our competition is fading. It's faster, too.

NewGen's dual-processor controller design, utilizing a 20MHz graphics RISC



800 x 400



300 x 300

processor, gives us the fastest PostScriptcompatible desktop laser you can buy. In fact, it will print most pages three to five times faster than the Apple LaserWriter® IINTX and blow the doors off anything else in its class.

IBM® and Macintosh® compatibility.

The TurboPS/300 gives you plug and play Macintosh compatibility - with Laser-Writer IINTX compatibility, AppleTalk® interface, Adobe® downloadable font

support and 35 Mac screen/printer fonts.

IBM compatibility includes HP LaserJet II, HPGL and Epson® emulations, and parallel/serial interfaces.

#### Free test results.

To get the full story on the high-resolution, high-speed TurboPS/400, call NewGen at (714) 641-8900. We'll send you a package including timing test results, print samples and the lowdown on our other remarkable laser, the TurboPS/300.

We'll also send the name of a NewGen reseller in your area. So you can see for vourself. And believe.



#### NewGen Systems Corporation"

17580 Newhope Street Fountain Valley, CA 92708 Telephone (714) 641-8900

NewGen, NewGen Systems Corporation, NewGen logo, TurboPS/300 and TurboPS/400 are trademarks of NewGen Systems Corporation. All other brand product names are trademarks or registered trademarks of their respective companies

Adobe and PostScript are registered trademarks of Adobe Systems, Inc. NewGen's compatible interpreter is compatible with Adobe PostScript.

## CheckFree: The Fastest Way To Pay Bills And Handle Finances.

CheckFree® **Electronically Pays All Your Bills** And Automates Your Recordkeeping. No Checks, No Stamps, No Paperwork.

Specially Designed for The Macintosh.®

For the first time, Macintosh users can experience the speed, convenience, and simplicity of paying bills the CheckFree way. Now you'll discover that CheckFree is the superior billpaying solution.

#### It Couldn't Be Easier.

All you do is enter payment information, and CheckFree software automatically records, categorizes, and sends the information to the CheckFree Processing Center via modem.
Payments are then processed through the Federal Reserve System—the same system that banks use to clear your checks today. Fixed, recurring payments (such as mortgages) can be made automatically; once they're set up, you never have to bother with them again.

Pay Anyone Through Any Bank.

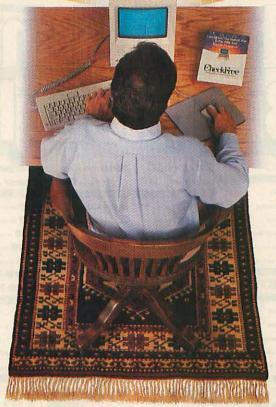
You can pay anyone with CheckFree because the CheckFree Processing Center utilizes electronic transfers as well as laser printed checks to make payments If a company or individual you are paying is not set up for electronic payment, the CheckFree Processing Center will print and mail a laser printed check for you. Because of its universal payment processing technology, CheckFree can process payments to anyone in the U.S. through the checking account you already have at any bank, credit union, or savings and loan.

#### No Loss Of Float.

You tell the CheckFree software when you want your bills paid and the CheckFree system pays them on the dates you specify. All we need is a few days advance notice to make sure your payments get processed on time.

Saves Time, Paperwork, And Money.

Your bill paying and other routine financial activities can be reduced to just a few minutes. Paperwork becomes virtually non-existent. Plus, the CheckFree service is only \$9.00\* per month -not much when you consider the savings in postage, bank charges, and late fees.



Organizes Your Finances.

CheckFree gives you a completely automated checking account register that's updated automatically with each transaction. You can also record deposits or other non-CheckFree transactions. Checkbook reconciliation is virtually automatic. There's even an easy-to-use package of income, expense, and budget reports that keeps you constantly aware of what's coming in and what's going out. Plus, you can export CheckFree data to Excel® and MacInTax®.

Completely Secure.

CheckFree is more secure than conventional check writing Payments are processed through the Federal Reserve System, so CheckFree never requires actual access to your account. Only you have access to your funds and only you authorize payments.

Availability: CheckFree is carried by leading retailers including Egghead Discount Software. Electronics Beutique. Babbages, Walden Software and Bookstores, and Software Etc. Client support: free access via Email. Hardware Requirements: Macintosh 512KE or higher, 800K drive, and a Hayes compatible modem. Guarantee: If you are not completely satisfied with CheckFree software return with proof of purchase within 30 days for a full refund (phone or mail orders only). \*Limitations: Over 20 monthly transactions involve a nominal surcharge (\$3 per ten payments or portion thereof). CheckFree is a registered trademark of Checkfree Corporation. All other trademarks are the property of their respective corporations

Reprinted from PC Magazine, November 14, 1589. Copyright © 1989, Ziff Communications Company. Copyright © 1989 by Scholastic Inc. All rights reserved. Reprinted from the May issue of Home Office Computing magazine.

**Backed By The Nation's Leader** In Electronic Payment Services.

Checkfree has been the leader in electronic payment processing since 1981, with current payment volume exceeding \$1,000,000,000 annually.

Used By Thousands All Over The U.S. See what experts have to say:

"The CheckFree electronic bill-paying service belongs to that rare class of product that is forward-looking universally useful, and available today."

PC Magazine, Best of 1989 Awards January 16, 1990 issue

"CheckFree makes bill paying a quick, painless task rather than a monthly ritual to be dreaded...CheckFree Corporation has been handling commercial electronic payments for companies such as CompuServe® for years, and its experience and professionalism showed in all aspects of my dealings with it."
PC Magazine

"... CheckFree did not fail me. When my banking statement arrived the first thing to catch my eye was a CheckFree check...this was reassurance that someone else could be trusted to pay my bills..."

Robert Cullen, Home Office Computing

To get CheckFree working for you, call 1800 882 5280 (Monday through Friday from 9AM to 7PM EST), send in the coupon below, or see your local dealer.

Yes, I want a fast, easy way to pay bills and handle my finances! Please send me:
CheckFree software for the Macintosh, just \$29.95. (Money back guarantee; return within 30 days if not completely satisfied for full refund.)
Also, please send me a Hayes Personal Modem 1200® for an additional \$99.00.
(Ohio residents add 5½% sales tax.) A \$4.00 shipping charge will be added to all orders Name
Address (No EO boxes please) City, State, Zip
Daytime Phone ( )
Expiration DateSignature
Mail to: CheckFree Software PO. Box 897 Columbus, Ohio 43216
Please allow 14 days for delivery on mail orders MAC 6

#### ub Graphics Post Script Type face



Typefaces listed are licensed from the international Typeface Corporation (ITCL) Visual Graphics Corporation (VGC), Kisqley/ATF, Fundation Tipographics Neutiville SA & Monotype Helvetica is a trademark of Livetype AG and its substitidaries.

This od was created on a Mac Il using Adds PageMaker 302. Adobe Illustrator 183. Silicae Beach Digital Darkroom. The text was set with the Futura & Futura Constensed families from the Image Club Typeface Library and output as regarities on a Linotronic 1300 PastScript Imagess

#### **600 Typefaces**

Avant Garde GOTHAC

Too many fonts for one page! This is the Image Club PostScript Typeface Library. We've developed 600 licensed typefaces in Mac or PC format for use with any PastScript printer. Fonts are

available on diskettes, on the LetterPress™ CD ROM (which contains our entire library of 600 fonts), or on the Art&Type™ Vendor CD ROM.

#### **Desktop Type Store** The Art&Type Vendor CD ROM uses a special program to unlock

typefaces and clip art from the CD ROM as they are required. The Vendor costs \$199 and includes 20 fonts and 1 volume of Digit-Art™ EPS clip art. Buying additional fonts or clip art from the Vendor is as easy as making a toll-free phone call. Image Club will provide an access key that unlocks the fonts or clip art images from the CD ROM. With the Art & Type Vendor you'll never miss another deadline waiting for a font to arrive

#### Macintosh Version

Furostil

Image Club fonts include both type 3 and type 1 PostScript fonts which guarantees compatibility with virtually any Macintosh application including Adobe Type Manage (ATM). With ATM you can print Image Club type on non-PostScript printers

such as an ImageWriter or a LoserWriter 11SC. Our fants also include PostScript artwork files. With Illustrator™ or Freehand™ you can customize characters, creating unique type-based designs

#### PC Version

Image Club type is compatible with Ventura PageMaker™ (Windows) and Corel Draw™ for use with any PostScript compatible printer. Image Club fonts will work with non-PostScript printers like an HP LaserJet™ when combined with PostScript software such as PreScript™ Freedom of Press<sup>TM</sup> or a PostScript card

#### Prices & Discounts

Whether you buy fonts on diskette, from the Art&Type Vendor CD ROM, or the whole library on the LetterPress CD ROM, our nd discount schedule make it easy.

PAINTBRUSH

Each font \$25. Minimum purchase \$50. Please note that typeface families cannot be solit us Discount schedule

10-30 fonts 20% off 131-210 fonts 35% off 211-300 fonts 40% off

31-70 fonts 25% off 71-130 fonts 30% off

Letterpress CD ROM full disc (all 600 fonts) \$4999 Letterpress full disc with NEC CD ROM drive \$5399 Art&Type Vendor CD ROM (Includes 20 fants and I valume of PostScript Digit-Art™ clip art)

Ordering

To view the entire library of 600 fants call for your free catalog. The Image Club Typeface Library on diskette or CD ROM is available from your dealer or directly from Image Club.



Zapf Int'l DEMITALIC

VISA, MasterCard and American Express. For a Free Catalog or Orders Outside USA Call (403) 262-8008





## RTTERS

#### **Batteries Get You** Everywhere

must take Steven Levy to task over his obvious disdain for things battery-powered [The Iconoclast, March 1990].

Somewhere out there beyond our sheltered shores, yeah, even beyond the great Mojave Desert, is something called The Rest Of The World, where things do not operate at 110V AC. They don't even have standardized wall sockets, for goodness' sake. And you can forget about those handy-dandy converters. If they can blow a hair drier, I shudder to think what they might do to an unsuspecting computer.

Those of us who must travel and write at the same time have waited patiently for a Macintosh product to fit the bill. Yes, it needs to be lighter, and definitely more affordable. But, as Levy points out, Mac devotees really don't have much choice at the moment.

So please, keep the batteries (but you can make them lighter). Christina Macias San Juan Capistrano, California

#### **Post-Portable Depression**

Steven Levy's column about the Mac Portable is the only real review I have seen. I couldn't agree with his judgments more. I'm an escaped physicist who studies buildings, so I do a fair amount of field research. All



I've ever wanted in a laptop is something that was easy to pack and carry and would run a word processor, a spreadsheet, a drawing program, and a scientific graphics program. I began saving my money so that when Apple did come out with a lightweight I could buy one.

I eventually bought Toshibas to tide me over. nice little machines that cost less than \$2000. But Levy is right. I hate MS-DOS. When the Dynamac and the Colby started shipping I kicked the tires, but they were large and heavy and I could buy a couple of Toshibas for the same price. When the Mac Portable came out, I was delighted it could run the software but depressed to find that it weighed nearly the same as my SE, was the size of a large typewriter, and was the price of three Toshibas.

My depression lasted until I saw Tandy's new little laptop, the Tandy 1100. I bought one of these machines for just over \$1000. It's just small enough to take with me and easy enough for me to use all the time. So if you are as disappointed as I was with Apple's portable, go have a look at this cheap and simple laptop. I had enough money left over in my Mac Portable savings account to pay cash for a new car. I'm not depressed anymore, and I owe it all to Apple. Terry Brennan

Oriskany, New York

#### Stereotype City

t's sad that Steven Levy lacks the foresight to see the technological breakthrough that is the Macintosh Portable. But it is far worse that his indefensible anti-Semitic comment de-(continues)

#### Corrections

The following information should have appeared in the table "SIMM Sellers" on page 134 ("Is Your Mac Obsolete?" February 1990): The MacZone (800/248-0800) sells 256K and 1MB SIMMs.

GeneSystems makes the scientific graphics program Plasmid Artist (New Products, February 1990).

Genigraphics Corporation should have been credited for its belp in the design and production of visuals for "Here's the Pitch" (March 1990).

C-Cube Microsystems (408/944-6300), maker of color compression bardware and software, was incorrectly referred to as C' in State of the Mac (April 1990).

The caption for the photo on page 95 (Macworld News April 1990) should bave read "Mark Tuttle (left) and David Sherertz of Lexical Technology."

The phone numbers for Brøderbund, maker of The Playroom (New Products, April 1990) are 800/521-6263 and 415/492-3200. The product retails for \$49.95.

Howtek's Pixelmaster printer does not support color transparencies ("Hot Wax & Cold Ink," February 1990). Although the Pixelmaster can print on transparent material, the opaque quality of the ink results in black-and-white output.

tracts from otherwise valid criticism.

Levy states that the Macintosh Portable, in giving the user critical feedback, "worries like a Jewish mother." Levy can aim his venom at whatever computer he desires, but he cannot be allowed to libel a religion or its followers. Macworld's Jewish readers deserve a prompt and public apology and retraction for this irresponsible breach of journalistic ethics. Ross Scott Rubin

Flushing, New York

My Jewish mother forgives me can you?—Steven Levy.

#### **Fonts of Wisdom**

The professional typesetters at our shop get sick and tired of seeing newcomers to typesetting and desktop publishing make the same mistakes over and over. A typesetting faux pas that makes us see red is the improper use of bitmapped fonts. If you're going to make the effort to typeset something, why not make it look good?

We hope that you will help us spread the word on bitmapped fonts: they're ugly and, as a law-abiding American citizen, you don't have to use them (if it's not an amendment, well, by God, it should be).

Carol White Andrew Dallons Melinda Parker Tebachapi, California

#### Type-Righter

learned to type in high school over 30 years ago, and that means I put two spaces after a period at the end of a sentence. I will continue to do it, come hell or high water, because it accomplishes what I want: it distinguishes the end of a sentence from the word space that follows an abbreviation. All word processors ever made (at least all that I know of) can handle that and don't do stupid things like leaving a ragged edge if the line breaks there. I have set type on machines with no more RAM than is now found in the average wristwatch, and they didn't have any trouble with it (and they did better hyphenation too). Now we have to contend with programs like ReadySetGo and Quark-XPress that display the attitude "we don't do it that way in typesetting." Baloney.

It used to be that typing was for business and typesetting was for books, and the two had very little in common. For decades even the keyboard layouts were different. It's not that way anymore. Acronyms and abbreviations are everywhere you look, in any kind of copy. There is no excuse for perpetuating this snooty myth any longer. These people should be ashamed of putting their customers through needless gyrations to get the glitches out of their finished work, glitches that the programs put there intentionally.

Eric Bear Albrecht Taos, New Mexico

#### Features Don't Follow Function

Y ou are doing a disservice to readers by overemphasizing features versus (continues)





### Power Defined.



#### Power Realized.

aster the power of your software quickly as your own private tutor talks you through the software, step by step. With your hands on the keyboard, trying each new skill as it's explained, you'll learn quickly and thoroughly. Our interactive, hands-on tutorials are available for:

- Macintosh Basics
- Excel 1.5 or 2.2
- FileMaker II
- FreeHand 2.0
- HyperCard
- Illustrator 88
- PageMaker 3.0
- Persuasion 1.0 or 2.0
- Word 3.0 or 4.0
- Works 1.1 or 2.0

We offer beginning, intermediate and advanced tutorials for each of these software programs, so there's sure to be one that meets your needs.

Use the training that Apple uses for its own employees, and sells under its own name in Australia, Canada, New Zealand, and the United Kingdom.

If you 're looking for a fast, convenient, affordable way to unleash the power of

The old way to learn your favorite Macintosh software took days. The Personal Training way takes just a few hours.

ee color citalos faile (100, San Jose et Hys.) your software, call us at 1-800-TEACH-99 or 408-559-8635 and we'll send you a complete catalog — at no charge.

Just like having a private tutor! CALL 1-800-TEACH-99

Circle 42 on reader service card

HOFMAS MWGOO

o 1989 Personal Training Systems. All Rights Reserved

LETTERS

functionality. In the beginning, there was this wonderful concept that users would purchase software that did one thing very well. Because of the Macintosh interface, all programs would share information. What wonderful functionality. Unfortunately, your reviewers favor the allin-one mediocre software.

A case in point is your review of desktop presentation packages ["Here's the Pitch," March 1990]. David Pogue makes the statement "PowerPoint, the granddaddy of them all, somehow continues to do well in the marketplace, despite the fact that it's nowhere near as capable as its rivals." Define capable. I'm sure Pogue defines it as features. The majority of users, based upon their purchase of Power-Point, define it as functional.

PowerPoint is by far the most functional of those reviewed. I've tried them all.

Steven Doctor Rochester, New York

#### Heap o' Help for Crashes

used to experience annoying "Unexpectedly quit" messages even after installing 8MB of RAM [see State of the Mac, February 1990]. The problem seemed to occur particularly when I was using PageMaker, with or without MultiFinder.

Then I discovered a little utility called HeapFixer from CE Software included with the QuicKeys program. The accompanying Read Me file is very informative and suggests that the user look at the amount of RAM the System file is occupying. If there is less than about 20 percent free space, look out for a

crash. After some experimentation, I used HeapFixer to set the system heap at 1200K larger than normal (about 1600K).

Anyone with plenty of RAM who is experiencing system crashes or unexpected quits should look at About Finder to see how much of the system heap is in use. If the "thermometer" is nearly all black, consider HeapFixer. I haven't had a crash or an unexpected quit in two months, in spite of the fact that I work with MultiFinder open at all times. Matt Cole

Lakewood, Colorado

#### MYMmania II

fter reading Andrew A Tobias's letter [Letters, March 1990], I'd like to reassure him that Levy's column [The Iconoclast, January

1990] is not the last word on MECA's Managing Your Money (MYM). I have a few of my own to add.

Reading Levy's column actually encouraged me to purchase MYM. I'm one of those sick people who wants a program that really nails down every last penny and then gives me the powerful tools included in Tobias's program. I am also the kind of computer enthusiast who doesn't mind a program with a few non-Mac foibles and idiosyncrasies as long as it does what I want.

But MYM was so frustrating to work with that I finally gave up on it completely. I can't count the number of times I reached for the Undo function, never to find it active. Changing a category under which an account is (continues)



# Introducing MACWORLD ONLINE

#### Order Your FREE Kit Today!

"America Online is the online service for the rest of us..."

- MACWORLD



YES! I want to discover MACWORLD on America Online. Send me my *free* America Online software kit, waive my first month's membership fee of \$5.95, and give me one *free*\* hour to try America Online.

#### Order Your FREE Kit Today!

"America Online embodies the Macintosh vision of ease-of-use, value, elegance, and depth."

- Guy Kawasaki



**YES!** I want to discover MACWORLD on America Online. Send me my *free* America Online software kit, waive my first month's membership fee of \$5.95, and give me one *free\** hour to try America Online.

Copyright © 1990 Quantum Computer Services, Inc.

\*Surcharges apply to use during business hours and outside the continental United States. America Online is a service mark of Quantum Computer Services, Inc. Macintosh is a registered trademark of Apple Computer Inc.

For Faster Service Call 1-800-227-6364, Ext. 5286

## Order Your FREE America Online / Kit Today!/



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

#### BUSINESS REPLY MAIL

FIRST CLASS

PERMIT NO. 8567

VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE

#### AMERICA ONLINE

QUANTUM COMPUTER SERVICES, INC. 8619 WESTWOOD CENTER DRIVE VIENNA, VIRGINIA 22182



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

#### BUSINESS REPLY MAIL

FIRST CLASS

PERMIT NO. 8567

VIENNA, VA

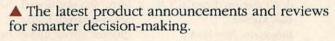
POSTAGE WILL BE PAID BY ADDRESSEE

#### **AMERICA ONLINE**

QUANTUM COMPUTER SERVICES, INC. 8619 WESTWOOD CENTER DRIVE VIENNA, VIRGINIA 22182

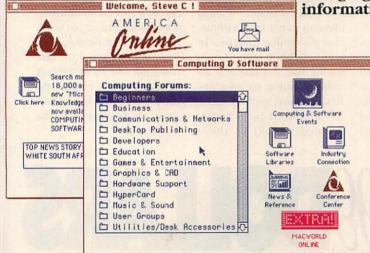
### Introducing MACV ONLINE

Bringing you exciting, dynamic Macintosh news and information — directly from MACWORLD magazine:



- ▲ Complete databases of Macintosh hardware developers, software publishers, and products.
- ▲ Up-to-date information on product versions and prices.
- ▲ Direct connection talk to MACWORLD editors online.

PLUS, you'll enjoy software libraries with thousands of Macintosh public domain and shareware programs, live conferences with Macintosh industry leaders, and computing software and support on America Online.



Order Your FREE

America Online Kit Today!

1-800-227 (or complete and mail an attached reply card)

and discover MACWORLD



Copyright © 1990 Quantum Computer Services, Inc. America Online is a service mark of Quantum Computer Services, Inc. Macintosh, Mac and MACWORLD are registered trademarks of Apple Computer Inc.

**IFTTERS** 

listed is impossible once you have recorded a transaction for it. And changing many things in the program entailed a trip through multiple screens (you couldn't call them windows because most of them are dialog boxes) that look confusingly similar.

It was especially infuriating to have to give up because using MYM for a moderately complex financial situation means a considerable investment in time to get everything set up. If this program was written by "Mac true-believers" as Tobias says, I would suggest they don't give up their day jobs. Dan Kuchta Brockport, New York

### FileMaker Graphics

Vour article "Forming Opinions" [February 1990] is correct when it

states that FileMaker II has crude graphics capabilities. However, you overlooked the fact that PICT graphics can be imported into File-Maker and then printed with high resolution. I use the wide array of drawing tools in Canvas 2.1 to draft forms from scratch, or redraw images scanned with a Hewlett-Packard ScanJet Plus. The finished graphic is then copied into the Clipboard and pasted directly into File-Maker. Graphics, such as the company logo, can be imported and arranged separately. Once the parts of the form are positioned, fields are overlayed. Using an additional layout allows fields to be rearranged so they are visible on the small screen of a Mac Plus or SE (handy for data entry). Additional fields or layouts can be used

for tracking copies of the form (records) after they are issued. The combination of a high-resolution background and fields with database capabilities can be achieved easily with FileMaker.

Ian McGregor Saskatoon, Saskatchewan, Canada

### **SEeing Static**

The static field of my SE used to create a heap of problems for me [see "Warning: Computing Can Be Hazardous to Your Health," January 1990] including allergic eye sores caused by dust clinging to my face, asthma, and unfamiliar fatigue. In addition, after some hours on my Mac, my hair was literally standing on end. Antiglare filters, such as those manufactured by Polaroid, seemed to add to these

troubles. With Polaroid filters I could actually feel the stat particles spraying my face

NoRad's antistatic radiation filter has done away with all of these problems, which is why I strongly recommend it. However, it has one serious flaw: the grounding cable can't be securely fastened to the screws in the back; it has to be tucked loosely into the gap between screw and chassis.

Alexander Schaumburg-Schloss, West Germany

You can ground the NoRad screen to the chassis provided you have a Torx T15 or 1/8-inch flathead screwdriver. Unscrew one of the case screws part way, slip the U-shaped lug around it, then retighten the screw. The contact between the chassis and the screw grounds the

(continues)



IMAGE CLUB ANNOUNCES THE FONTPAK SYSTEM. SETS OF 20 TO 26 PROFESSIONAL QUALITY POSTSCRIPT TYPEFACES FOR ONLY \$299. EACH FONTPAK IS AN ASSORTMENT OF FACES SELECTED FROM A PARTICULAR TYPEFACE CATEGORY. WITH A PRICE PER FONT AS LOW AS \$11.46, FONTPAKS GIVE BOTH AMATEUR AND PROFESSIONAL DESIGNERS AN EASY WAY TO BUILD A USEFUL WELL ROUNDED TYPE LIBRARY WHILE SAVING A BUNDLE. ALL IMAGE CLUB FONTS COME COMPLETE WITH A LARGE FOREIGN CHARACTER SET, A FULL SELECTION OF SCREEN FONTS, BOTH TYPE 3 AND TYPE 1 ATM COMPATIBLE POSTSCRIPT PRINTER FILES, AFM FILES & EDITABLE ILLUSTRATOR OUTLINE ART FILES. FONTPAKS ARE AVAILABLE IN BOTH MACINTOSH & PC FORMAT.

Bernhard Tango BALLOON BOLD BALLOON EXTRA BOLD PT Barnum Mistral American Uncial American Uncial Bold Champagne Castle BROADWAY BROADWAY ENGRAVED Gillies Gothic Light Gillies Gothic Bold American Uncial Ovaline ITE FIELELE Salto STENCIL Allegio DAVIDA Reporter PAINTBRUSH Murray Murray Bold IVY LEAGUE IN IRABUR OPEN

BOOK LACET - COMMERCIAL SCEPT - YAVADD - BROOK - BROCH SCEPT - DOM CASSAL - DOM BLAGONAL - SCOTFORD UNDAL Drok - Platrial - Goldrigh - Keyson Cassal - Savage - Frantir - Gallia - Park aybre - Kaifman Scept Kaifman Scipt Bood - Ity Leagle - Wy Leagle Open - Boodoway - Broadway Erreyto

BERRIEF GLOSTYLE - IT CREWELTY GLOSTYLE FEALL - IT CREWLET CONSTITUE BOUR - IT CREWLETY GLOSTYLE BOUR ITALIC - IT CREAMAGE BOOK I FILE ALLAWING BOOK - IT CREAMAGE BOOK I FILE ALLAWING BOOK - IT CREAMAGE BOOK I FILE ALLAWING CONGRESSED BOOK - IT CREAMAGE CONGRESSED BOOK I FILE ALLAWING CONGRESSED BOOK I FILE ALLAWING

TE MARE BOOK - HE MARE AROURA - HE MARE DRAW - HE MARE ROMD - HE MARE HETRA - HE MARE CONTING - HE MARE CONTOUR - THI AIRHARD SOUR MOTORM 45 - UNIFORM 46 - UNIFORM 55 - UNIFORM 56 - UNIFORM 65 - UNIFORM 66 - UNIFORM 66 - UNIFORM 75 - UNIFORM 76 - UNIFORM CONDENSED 39 - UNIFORM CONDENSED 49 - UNIFORM CONDENSED 48 - UNIFORM CONDENSED 48

LIGHT - FUTURA LIGHT ORLIQUE - FUTURA BOOK - FUTURA BOOK ORLIQUE - FUTURA MEDIUM - FUTURA MEDIUM ORLIQUE - FUTURA DEMI BOLD - RUTURA DEMI BOLD - RUTURA DEMI BOLD - RUTURA DEMI BOLD - RUTURA DEMI BOLD ORLIQUE - FUTURA BOOK FUTURA BOLD GRUDUE - RUTURA EXTRA BOLD - RUTURA EXTRA BOLD GRUCUE - FUTURA CONDRISED MEDIUM - RUTURA CONDRISED MEDIUM GRUDUE - RUTURA CONDRISED BEMI BOLD Futura condensed demi bold grudue - futura condrised bold - rutura condrised bold grudue - futura condrised extra bold - futura condrised extra bold - rutura condrised extra bold grudue

BABLOC - BADLOC COMPRESSION - ESTRO - ARQUITECTURA - COMPACT LIGHT - COMPACT - COMPACT BOLD - BUROSTIL EXTENDED - BUROSTIL EXTENDED BOLD EUROSTIL EXTENDED OUTLINE - EUROSTIL EXTENDED BOID OUTLINE - GRAPHIX - GRAPHIX SANDOW - IL TRA CONDENSED SANS SERIF - LETRA CONDENSED SERIF CORVINUS SKYLINE - ITC LSC CONDENSED - ITC LSC CONDENSED ITALIC - NASTRAL - NEVISON CASUAL - REPORTER - SAVAGE - SALTO

IMAGE CLUB GRAPHICS INC. #5 1902 ELEVENTH STREET SE CALAGRY ALBERTA CANADA T2G 3G2 PHONE 403 262 8008 FAX 403 261 7013 ORDERS 800 661 9410 APPLELINK CDA 0573





### THE MOST INGENIOUS PORTABLE PRINTER SINCE THE PENCIL.

ost computer printers are sentenced by their own sheer bulk to lifelong confinement on a desktop.

But now GCC Technologies<sup>™</sup> has created a printer for the Macintosh<sup>®</sup> with con-

you get much higher print quality than the ImageWriter® II, for not much more money.

All of this has obvious consequences for the highly mobile. Since WriteMove works off rechargeable batteries, you will day via overnight delivery for only \$9.

If after trying WriteMove for up to 30 days you aren't completely satisfied, just return the printer and we'll cheerfully refund your money, no questions asked.



siderably more freedom than that. It's called WriteMove:™ the "biggest" printer ever to come in an incredibly small package.

WriteMove weighs a scant three lbs. It measures just 2"x 61/2"x 103/4". (Any smaller and you couldn't get the paper in.)

But it's the only ink jet printer of any size that gives you unlimited freedom to reduce and enlarge both type and documents. Because it's the only one with outline fonts—imaging software that provides functionality usually associated with laser printers.

### High Quality Output, To Go.

As a result, you can use WriteMove to compose documents with word processing software like Microsoft® Word, or Excel. And then silently print them out on cut sheet or fanfold paper at 192-dpi resolution. So, In Canada, (800) 263-1405 © 1989 GCC Technologies, Inc.

have direct access to letter-quality output on airplanes, in hotel rooms or even at that popular weekend workstation called home.

Which could bring a whole new meaning to the phrase "freedom of the press."

To exercise that freedom, use the number below to order WriteMove today. Or ask for the authorized GCC Technologies dealer nearest you. Here's how.

### Toll-Free, Hassle-Free, Risk-Free.

To order just call 800-422-7777 from 9 to 8 on weekdays, or 10 to 4 on Saturdays. Our expertly trained staff will be glad to answer questions, provide technical support, and offer advice on choosing and getting the most out of any of our products. Ask for our free catalog. When your order is received by 8:00 PM (EST), it will be shipped the same

### One Year Warranty.

Finally, WriteMove carries a full one year warranty covering both parts and labor. We also offer repair service at any one of hundreds of GCC dealers.

### WriteMove Portable Printer \$599.

For the name of the authorized GCC Technologies dealer nearest you, or

### To Order, Call 800-422-7777.

We are glad to accept MasterCard, Visa, American Express, or your company's corporate purchase order.



Circle 305 on reader service card

screen. In fairness, several manufacturers provide grounding cords that plug directly into a three-pronged outlet. They have only the ground lead, so there is no danger of electrocution.—Ed.

### Simple SIMM-On

V our article on upgrades ["Is Your Mac Obsolete?" February 1990] contains misinformation about installing SIMM chips into Macintosh SEs. "Memory Configurations" (page 129) states that a resistor must be cut on the main logic board in order for the SE to recognize the new memory. The SE has a jumper block that can be switched or removed (depending on the memory configuration) to allow the computer to recognize the increased memory. This jumper block has been present in the SE since at least November 1988. Rebecca R. Van Dalsem Portola Valley, California

### An MB is an MB

'm still trying to figure out one paragraph from "Is Your Mac Obsolete?" February 1990, page 130:

"If you have been reading carefully, you may be wondering why it takes eight 256K SIMMs to get 1MB of memory. One 256Kbit chip can store 256,000 bits of information, but only 1 bit is accessible at a time.... Eight 256Kbit chips on one SIMM provide only half of that 16—8 bits (1 byte) of memory."

Eight 256K SIMMs for one megabyte? I've always thought that it takes four:  $(4 \times 256 = 1024)$ . Also, whether the CPU takes its data 8, 16, or 32 bits at a time, a byte will always be 8 bits, and a

megabyte will always be 1024 bytes. This implies that 1MB on a Mac II–family machine is less than 1MB on a Plus or SE, since the 68020 and 68030 CPUs get their data 32 bits at a time.

Jeff Morrow Ann Arbor, Michigan

The paragraph (which was incorrectly edited) should have read as follows. Each 256K SIMM contains eight 256Kbit chips, and it takes four 256K SIMMs to get 1MB of memory. One 256Kbit chip can store 256,000 bits of information, but only 1 bit is accessible at a time. Since a byte equals 8 bits, eight 256Kbit chips (on the SIMM) are necessary for 256K of memory. Similarly, eight 1Mbit chips on a SIMM provide 1MB of memory. The CPU in the Mac Plus and SE needs to access 16 bits (2 bytes) at a time. Since one SIMM provides only 8 bits (1 byte), you must buy SIMMs two at a time for

a Plus or SE. The CPU in a Mac SE/30, II, IIx, or IIcx, on the other hand, accesses 32 bits (4 bytes) at a time. As a result, you must buy SIMMs four at a time for those Macs.—Ed.

### Skeletal Screw-Up

read with great interest Dr. Tessler's article about the expanding role of the Mac in the medical field ["The Medical Desktop," March 1990]. Not only was the text informative, the graphics included were well chosen and illustrated key points. However, I thought I should point out that the cervical spine film on pages 139 and 142 is upside down. Of course, I suppose we could say the subject was standing on his head when the radiograph was taken, but considering the arthritis in the lower segments, that (continues)

### MS Word Style Sheets Made Easy!

- ✓ Master the Power of Style Sheets
- ✓ Standardize your Documents
- ✓ So Simple Learn in Minutes
- ✔ Professional Templates Included (Correspondence, resumes, newsletters & more!)





More than anything else, Word's style sheet capabilities separate it from the pack. If you're confused by the style dialogs, you may be missing out on all that



formatting power. **Stylist** unlocks the secrets of Word style sheets by displaying and printing their contents in beautifully organized windows and reports. Compare Word's dialog (left) with **Stylist**'s *ZOOM* window (right), and you'll see what we mean! Available now for only \$79.95.



**SNA, Inc.** PO Box 3662 • Princeton, NJ 08543 (609) 799–9605 Order Toll-Free (800) 628-6442

Add \$5 S/H, NJ add 6% Tax Requires Mac Plus/SE/II, Word 4.0 QUESTION: Why would your computer warranty only be good for 90 days? ANSWER: Simple. Because computers break down!



Sooner or later, your computer will break down. Or, at any time you could be the victim of a power surge, fire, theft, natural disas-

ter, accidental damage, and more. The odds against you are high.

Unless you have the ready cash to repair or replace your computer system, you need SAFEWARE FIX:IT. Be insured for mechanical breakdown, (wear and tear) as well as external losses. All in a single policy for as little as \$100, per year. Call free for full information!

1-800-822-2345 Local 614-262-0708 Fax 614-262-1714



SAFEWARE, The Insurance Agency Inc. 2929 N. High Street • P.O. Box 02211 Columbus, OH 43202 Not Available in All States

Circle 293 on reader service card.

# Death Taxes Software Piracy



### We can save you from one of them.

orry. Death we can't do anything about. As for taxes, when you use our product you'll probably wind up paying more. But software piracy: there we offer some help. Our family of software protection devices (dongles) have improved unit sales for over 2,000 companies around the world. Our products can be used in the Macintosh, MS-DOS, and OS/2 environments.

Build Your Own Custom Protection Environment

Use our patented "dual-locking" ASIC chip as the basic building platform. Next, add options like: on-the-fly read/write memory, write-once or multiple-write locking codes. Then add your own programming creativity to build a

protection environment best suited to your product.

Users attach the device to their SCSI port, and programs won't run without it. Back-up copies, hard disk and AppleTalk operation are not interfered with.

### Your Intellectual Property Belongs To You

And if you don't protect it, who will? Our products offer the most equitable way to protect your interests without sacrificing

the rights of your customers. Call us today for information and demonstration units.

Software Security



203-329-8870 Fax 203-329-7428 BBS 203-329-7253

AppleLink<sup>tm</sup> D2379

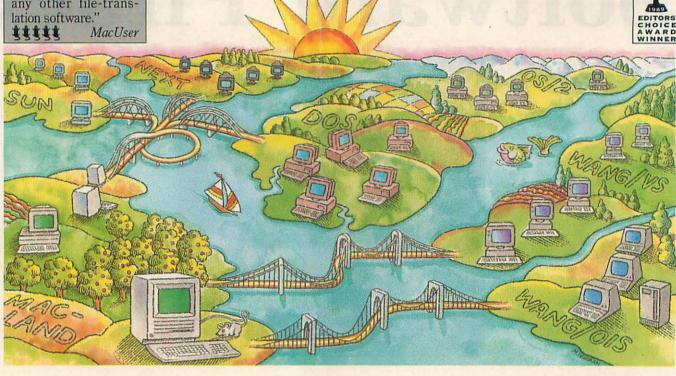
Macintosh, AppleTalk are trade marks of Apple Computer Inc., Activator, Mactivator are trade marks of Software Security, Inc. illustration: detail from Michelangelo's Last Judgement

Circle 463 on reader service card

NOW, MACLINK®PLUS
TRANSLATES EVERYTHING

"Still the standard...
UNDER THE SUN

offers more translations between more PC and Mac applications than any other file-translation software."



The award-winning software package that transfers and translates files between Macintosh and DOS or OS/2 programs now does the same for Sun worshippers. And for the NeXT world.

With MacLinkPlus/PC, you can now send files in either direction between Macintosh and virtually any other desktop environment. Files arrive in the new environment with the correct styles and formats in place—just as if they had been created there.

MacLinkPlus/Wang OIS and MacLinkPlus/Wang VS provide the same bi-directional connectivity between Macintosh and Wang.

### TRANSFERS AND TRANSLATES

The MacLinkPlus/PC package arrives with everything you need —software, manual, a direct connect cable (a Hayes modem or compatible also works), and our full library of over 100 translators.\*

If you don't need file transfer capabilities (maybe your Macs and PCs already share a network or server), then simply order MacLinkPlus/Translators. It's the same package without the cable and communications capabili-

MAC NAME OF THE PROPERTY OF TH

ties. And, it's the ideal software purchase for anyone with a Macintosh FDHD SuperDrive or external drive that reads DOS disks.

### INSTANT PASSPORT TO EVERYWHERE

Make incompatibility a thing of the past with the MacLinkPlus family of Databridge products. For the name of your nearest DataViz dealer, call 203-268-0030 today.

\*takes advantage of special connections built into MacWrite\* II from Claris™

All product names are trademarks of their manufacturers.



would be a dubious explanation at best.

Keith H. Sherry, M.D. Mishawaka, Indiana

Thanks for pointing out the mix-up. We published the image just as we received it, inverted, and we regret not catching the error. —Ed.

### **How Many Minitels?**

s an active member of the Paris Macintosh community, I get a lot out of reading Macworld each month. In your February column [Commentary], I was surprised to read about the supposedly 20 million Minitels that have been distributed here. The number is actually verging on 5 million, and a significant number of these aren't really used, even for as simple a function as the Electronic Phone Directory. Nevertheless, only a

public service could afford to invest so much (nearly \$2 billion initially) with no guaranteed return, enabling France to pass rapidly from a country with an underdeveloped phone system to one with over 12,000 online services used at the rate of 6 million hours per month. Lionel Lumbrosco Paris, France

### Ethernet + LocalTalk = ?

I really enjoyed the article on ISDN. I wanted to clarify one item, however. In the second paragraph you stated that EtherTalk was "Ethernet implemented over LocalTalk." This is not true. It is a confusing issue, but generally both Ethernet and LocalTalk are used to describe hardware standards (the physical medium), while AppleTalk and EtherTalk

define protocol standards. EtherTalk is simply AppleTalk protocols running over Ethernet cabling. By definition, however, you cannot run Ethernet over LocalTalk, since they're both hardware standards.

Mark S. Burnham Walnut Creek, California

### It Can Print Envelopes

Reviewer Ron Risley should be happy to know that his one real reservation about the Fujitsu RX7100PS PostScript page printer [Reviews, April 1990]—its inability to print envelopes—has been more than resolved. Actually, printing envelopes is one of the printer's greatest selling points.

The RX7100PS and the PS+ are now bundled with two software enhancements that make envelope printing

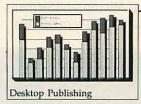
and letter writing a breeze: Working Software's desk accessory QuickLetter and Fujitsu's proprietary Select-A-Bin menu-driven utility for automatic switching of dual paper bins. Both printers also come with screen fonts on disk.

Sallie Siegal Fujitsu America San Jose, California

Letters should be mailed to *Letters*, *Macworld*, 501 Second St., San Francisco, CA 94107, or sent electronically to CompuServe (70370,702) or MCI Mail (294-8078). Include a return address. We regret that, due to the high volume of mail received, we're unable to respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*.

### **DrawTools**

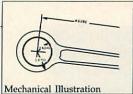
Illustration Tools for MacDraw® II



Sizer: Resize objects absolutely or as a percentage via the keyboard, and compute areas.



Adjacency: Move an object next to another object so that the nearest sides touch without overlapping.



Tools: Construct fillets, extend or clip lines and arcs, and snap lines.

DrawTools is a trademark of Paracomp, Inc.
MacDraw is a registered trademark of Claris Corporation.

DrawTools is a collection of three easy-to-use desk accessories created to add more power and flexibility to the drawing capabilities of MacDraw II. It's designed for

anyone who uses MacDraw II for presentations, desktop publishing, business graphics, creative design, technical illustration, and mechanical drawing. MacDraw II and DrawTools provide the features you need at a price you can afford.

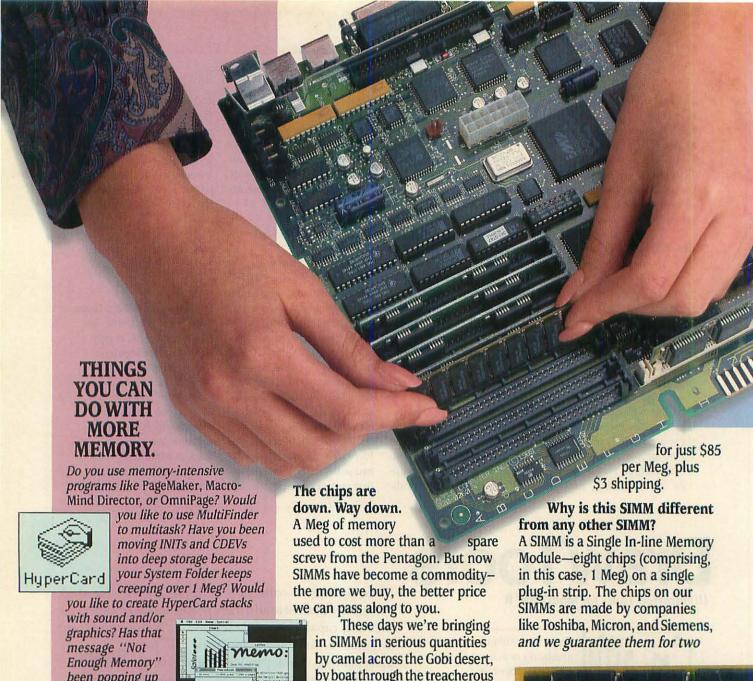


PARACOMP

Make the Best Even Better	with DrawTools for MacDraw II
I'm sold! Please send n (plus \$5 shipping and handling.	ne DrawTools for only \$79. Residents of CA, DC, and NY, add 6.5% tax).
☐ I'm interested! Tell me	more about DrawTools.
name	company
address	city
state/province	postal code
telephone	
method of payment:  check	credit card
credit card namecar	rd #Exp
signature	
Paracomp, Inc. 123 Townsend Str	eet., Suite 310, San Francisco, CA 94107

Circle 213 on reader service card.

(415) 543-3848



been popping up with alarming regularity? Do you feel

we're getting too personal? If you can answer yes to any of these questions,



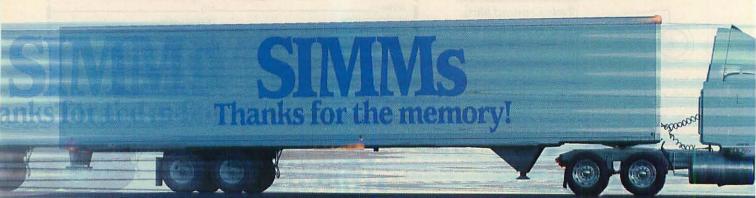
read on! Because the solution is adding SIMMs to your system board. Yeah, that's definitely the ticket. And

the fastest and easiest way to add some SIMMs is by buying them from us.

by boat through the treacherous Magellan Straits, and, finally,

by special couriers into Marlow during the dead of night. Actually, we buy them by the load from the major manufacturer offering the best price. And send them out to you overnight via Airborne Express. So you can bring your Mac to full power tomorrow,





# BigSIVIII Sale \$85/Meg!

FREE It's no good knowing the moves unless you've got the motion. That's why every order for MacConnection Installation SIMMs comes with an instruction booklet and a free video (VHS or 8mm) that Video! demonstrates how to get inside your Mac and put your SIMMs in their place.

years. You can add up to 4 Meg in a Plus or SE (2 Meg at a time) or 8 Meg in an SE/30, MacII, IIx, IIcx, or IIci (4 Meg at a time).

Our super-low price is for the 80ns SIMMs which deliver maximum speed on the Mac IIci (so you can take your SIMMs along if you upgrade later).

Can I really do it myself? Installing SIMMs is like hooking up a stereo system or putting together a tricycle on Christmas morning. You have to relax, take your time, pay attention, and promise not to go at it with a sledge hammer if you get frustrated.

With our free instruction booklet, free technical support, and free installation video, thousands of customers have successfully installed SIMMs, saving hundreds of dollars in the process. If you get stuck, just call us toll-free and we'll talk you through it step by step.

All it takes is about half an hour on a Plus, SE, or SE/30—We'll sell you the special tools to get inside those Macs for just \$8. To install SIMMs on the MacII line takes even less time

and no special tools.\*

The result is a rewarding feeling of accomplishment, a well-balanced checkbook, and enough RAM to run roughshod over the most robust applications. So get on board the micro memory lane today by calling 1/800-334-4444.

THAN SE	CEKNA!	UPADY III	) WOMEN	€KM410	Na ara	
CTOODAJ-8	C1000AJ-8	C1000AJ-8 005 KOREA	OOS KOREA	DI WOREA	0000	

### MacConnection SIMMs, 2 Yr. Warranty

macconnection officials, 2 11. Wallan	ity
1 Meg, 80ns	\$85
Mac Toolkit (for Plus, SE, SE/30 only)	\$ 8

Prices subject to change without notice.

### MacConnection \*\*Connection\*\*

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791

© Copyright 1990 PC Connection, Inc. MacConnection is a division and registered trademark of PC Connection, Inc., Marlow, NH.

\*Most manufacturers (including Apple) get a little nervous about non-authorized personnel (that means you) working inside their machines. Be advised that opening your Mac may void the warranty, so check with your dealer if you're concerned.

### When it comes to

The majority of products we carry are covered by 30-60 day Money Back Guarantees (as listed here in red). If you're not happy with one of those products, call us for an authorization and return it with all of the original packaging within the guarantee period for a refund check (or credit on your credit card). We reserve the right to limit quantities on such returns.

Version numbers in our ads are current at press time. You will receive the latest version when you order, because that's all we sell. Also, all software is not copy-protected, unless indicated otherwise by (CP). Finally, please refer to the four-digit number next to the product when ordering. Thanks!

### BUSINESS

- 1	Aatrix Software 30 day MBG
5872	Checkwriter II 2.0
3976	Aatrix Payroll 3.5 109.
	Aatrix Payroll PLUS 3.1 175.



HyperGlot ... 30 day MBG

Word Torture—High-quality digitized sound for learning Japanese, Spanish, French, Russian, German and Italian. Verb and pronunciation tutors are also available . . . . . see line listing.

7	Abacus Concepts 30 day MBG
4482	StatView SE+Graphics 1.03 179.
4481	StatView II 1.03 279.
5840	SuperANOVA 1.1 (for Mac Plus/SE) 309.
5904	SuperANOVA 1.1 (for Mac II) 309.
5907	StatView II/SuperANOVA Bundle 569.
1	Acius 30 day MBG
6948	File Force 1.0 249.
5618	4th Dimension 2.0.10 465.
6894	4th Dimension Runtime (1 user) 79.
4024	4th Dimension Runtime (4 user) 249.
1	Advanced Software 30 day MBG
5608	DocuComp 1.2 89.
	A Lasting Impression
5465	ResumExpert 39.
5749	Cover Letters
	Sales & Marketing, Students, Education,
	Finance & Banking, Management Edition,
	Computer Science & Engineering, Health
	Services, & Glamour Professions ea. 39.
	Ashton-Tate
1324	FullWrite 1.0 (free upgrade to 1.1) 55.
6846	dBASE, Full Impact, & FullWrite Bundle. 99.



### Ashton-Tate

A MacConnection exclusive! While supplies last, get FullWrite Professional 1.0, dBASE Mac 1.0, and Full Impact 1.0 at one terrific price. All may be upgraded free to the latest versions direct through Ashton-Tate.... \$99.

	Blyth Software	
	Omnis 5 1.1	
5855	Omnis 5 (Additional 1 user)	. 59.
*	BrainPower 60 day MBG	
	DesignScope 1.15 special	119.
6362	Statalyzer 1.1	179.
	Bravo Technologies 30 day N	
	MacCalc 1.2D	
1000	Chang Labs 30 day MBG	. ,
	C.A.T. 2.0	call
	CheckMark Software 60 day	
	CashLedger 1.3A	
	Payroll 4.1	
	MultiLedger 1.3	235.
	Claris	
1129	MacWrite II 1.1	145.
	FileMaker II 1.1V2	219.
5910	FileMaker II & MacWrite II Bundle .	289.
1125	MacProject II 2.1	365.
	Computer Associates/Bedford	
4977	ACC PAC Simply Accounting 1.1.	225.
*	Deneba Software 30 day MB	G
4700	BigThesaurus 1.0	
1767	Comment 2.0	
1768	Coach Professional 3.1	125
	ouddin to book and of the tree tree	



★Digital, Etc 30 day MBG	
6378 Business Sense 1.3 \$	269
★Dow Jones 30 day MBG	
	189.
	189.
*Electronic Arts 30 day MBG	
1543 Thunder II 1.01 (Batteries Included)	49.
★Fox Software 30 day MBG	
5572 FoxBASE II/Mac 2.0	
4844 FoxBASE +/Multi-User 2.0	389.
Individual Software	
4720 101 Macros for Excel 2.0	35.
Informix	
4955 WingZ 1.1	245.
★Intuit 30 day MBG	0.5
2425 Quicken 1.5	35.
★Layered 30 day MBG	0.5
2613 Insight OneWrite 1.0	85.
5207 atOnce! 1.01 Insight Expert Series each	205.
2608 FrontDesk Multi-User 6.10 (single)	50.
*Lundeen & Assoc 60 day MB	
2684 WorksPlus Spell 2.0A	
2004 Worksi ius opeli 2.0A	00.



*	MECA 60 day MBG
	Managing Your Money 3.0 122.
	Microlytics 60 day MBG
	WordFinder 2.0
	Microsoft 30 day MBG
	File 2.0A
	Works 2.0 177.
	Works on Apple Mac Book 15.
4969	Word 4.0
4056	Working with Word Book 18.
2865	Excel 2.2
2864	Excel in Business Book 18.
6500	Excel Money Mgr. Book (incl. disk) . 25.
5454	The Microsoft Office 525.
6382	The Microsoft Office (CD-ROM) 599.
	Monogram 30 day MBG
	Dollars and Sense 5.0 81.
	New Horizons 30 day MBG
	WordMaker 1.0.1 65.
	Niles & Associates 30 day MBG
	EndLink 1.0 58.
	EndNote 1.2.1
	Nolo Press 60 day MBG
	For the Record 1.03 28.
2981	WillMaker 3.0

### Mac tech support



### Abacus Concepts ... 30 day MBG

SuperANOVA 1.1—1990 MacUser Eddy Award Winner for Best Data Analysis Product. Analyzes virtually any general linear model. Performs ANOVA, ANCOVA, MANOVA, MAN-

THE RESERVE OF THE PARTY OF THE	_
★Odesta 30 day MBG	
3014 GeoQuery 1.01	0
5621 Double Helix III 3.0	o.
	9.
Paracomp 4664 Milo 1.0. 156	_
	Э.
Paragon Concepts	
5683 Nisus 2.03	Э.
	,
6916 Dynodex 1.1	٦.
4781 Vantage 1.5	<u> </u>
★ProVUE 60 day MBG	٥.
	,
4582 Panorama 1.5	٥.
6929 WealthBuilder 1.0 (by Money Mag.) 145	
*Reference Software 30 day MBG	٥.
6268 Grammatik Mac 1.0 5	1
Satori Software	
3320 BulkMailer 3.25	=
3321 BulkMailer Plus 3.25	٠. د
Components G/L or A/R 1.0 each 369	). a
★Sensible Software 30 day MBG	
3375 Sensible Grammar 1.5.8 5	1
4692 Bookends 1.2	
★Softstream Int'l., Inc 30 day MB	3
5439 Endeavour Planner 1.0 95	
★ Spinnaker/Springboard 30 day MBC	
6508 The Resume Kit	5
★Survivor Software 30 day MBG	•
6097 Invoicit 1.01 (regs. MacMoney) 49	)
3289 MacMoney 3.5 59	
★Symantec 30 day MBG	
3422 More 3.0 265	ō.
★Symmetry 30 day MBG	
4504 Acta Advantage 1.01 63	3.
6069 KeyPlan 1.0	3.
★Synergy 30 day MBG	
6617 KaleidaGraph 2.0.2 145	j.

★Timeslips 30 day MBG
2986 Timeslips III 2.0 \$169.
★T/Maker 30 day MBG
3639 WriteNow 2.2 117.
★WordPerfect 60 day MBG
3800 WordPerfect Mac 1.0.3 229.
★Working Software 30 day MBG
3788 Findswell 2.0
4699 QuickLetter 1.02 72.
★Zedcor 60 day MBG
6742 DeskWorks

### **GRAPHICS & DESIGN**

	Aapps
6509	MicroTV
6695	DigiVideo 1.0
	Adobe Systems
	(MacConnection carries the entire
	Adobe Type Library volumes 1-135 . ca
5750	Adobe Type Manager 1.2 55
6053	Adobe Plus Pack 109
6156	Adobe ATM/Plus Pack special 159
6671	Adobe Type Set 1 58
6677	Adobe Type Set 2 58
6931	Adobe Type Set 1 & 2/ATM Pack 149
6957	Adobe Type Reunion 1.0 39
6098	TypeAlign for ATM 1.0 59
1137	Adobe Illustrator 1.9.3 (w/ATM) 275
6644	Adobe Photoshop 1.0 special 499
1138	Collector's Edition I (Symbols, etc.) 79
4816	Collector's Edition II (Patterns, etc.) 129
5605	TrueForm 2.0
5001	StreamLine 1.2 225
1142	Publishing Pack 1: Newsletters 229
4565	Pub. Pack 2: Forms and Schedules 279
4566	Publishing Pack 3: Presentations . 279
5168	Smart Art I 1.01 84
5602	Smart Art II 2.0 84
5603	Smart Art III 2.0 84
	EndNote Fr. II:nk
A STATE OF THE PARTY OF	THE RESERVE OF THE PARTY OF THE



### Niles & Associates ... 30 day MBG EndNote 1.2.1—Stop typing bibliographies! EndNote adds them automatically to your documents. Stores 32,000 references ... \$75. EndLink 1.0-EndLink automatically imports references from on-line services. . . . . . . . 58.

7	Aldus 30 day MBG
4751	Persuasion 2.0 \$329
1330	FreeHand 2.02
1331	PageMaker 4.0 499
6149	PageMaker Color Extension 135. Altsys
1194	FONTastic Plus 2.02 51.
5425	Art Importer 2.0 89
6499	Metamorphosis 1.0 149
1195	Fontographer 3.0.5
5756	FlexForm Bus. Templates I special 45.
5760	FlexForm Bus. Templates II special 45.



White Knight 11—(Formerly Red Ryder) supports XMODEM, YMODEM, ZMODEM, Kermit, and CompuServe Error Correcting protocols. Includes Okyto 1.0, a Mac-to-Mac file transfer program, and a free subscription to GEnie . \$85.

34.		MacFontware Typeface Packages
34.	5970	9 Futura Medium
34.	5974	15 ITC Garamond
- 646	5975	16 ITC Souvenir
	5969	18 Bitstream Charter
	5973	19 ITC Galliard
	5971	20 Headlines 1
	5972	21 Headlines 2
	5968	23 Baskerville
		Bright Star Technology
	3962	HyperAnimator 1.5
	6093	interFACE 1.0
32		Broderbund Software
	1427	The Print Shop 1.3.1
	6281	TypeStyler 1.01
	*	Casady & Greene 60 day MI
		MacConnection carries the entire
QP.		of Casady & Greene fonts.

	Maci Unitware Typerace Fachages
5970	9 Futura Medium 89.
5974	15 ITC Garamond 89.
5975	16 ITC Souvenir 89.
5969	18 Bitstream Charter 89.
5973	19 ITC Galliard 89.
5971	20 Headlines 1 89.
5972	21 Headlines 2 89.
5968	23 Baskerville 89.
	Bright Star Technology
3962	HyperAnimator 1.5
6093	interFACE 1.0 249.
	Broderbund Software
1427	The Print Shop 1.3.1 35.
6281	TypeStyler 1.01
*	Casady & Greene 60 day MBG
	MacConnection carries the entire line
	of Casady & Greene fonts.
	Volumes 1-22 each 46.
1575	Fluent Fonts 2.0 27.
	Claris
19/19/2005	MacPaint II 2.0 93.
100000000000000000000000000000000000000	Smart Form Designer 1.01V 289.
37073350	MacDraw II 1.1 289.
A STATE OF THE STATE OF	MacDraw II & MacWrite II Bundle . 365.
4814	Claris CAD 1.0 579.
	5974 5975 5969 5973 5971 5972 5968 3962 6093 1427 6281



### For anything here

Adoha Type Reunion
Adobe Systems
Adobe Type Reunion 1.0-Just place Adobe Type
Reunion in your system folder and your
typefaces are automatically alphabetized and conveniently sorted by family name and
weight. Once and for all \$39.
Weight. Office and for all

	Computer Associates/Cricket
1668	Cricket Graph 1.3.2 125.
1670	Cricket Presents 2.0 319.
*	Creative Software 30 day MBG
6645	Easy Color Paint 1.1 42.
*	Custom Applications 30 day MBG
6517	Freedom of Press 2.1A 255.
4	DeltaPoint 60 day MBG
6095	DeltaGraph 1.0
*	Deneba Software 30 day MBG
	UltraPaint 1.5 125.
1769	Canvas 2.1
y y	Dream Maker 30 day MBG
4088	
4840	Cliptures: Business 1 69.
4841	Cliptures: Business 2 69.
	Dubl-Click Software
	World-Class LaserType Vol. 1-9 each 42.
	World-Class Fonts! each 42.
3964	WetPaint Classic Clip-Art (1 & 2) 42.
3965	WetPaint For Publishing (3 & 4) 42.
3966	WetPaint Animal Kingdom (5 & 6) 42.
3967	WetPaint Special Occasions (7 & 8) 42.
3968	WetPaint Printer's Helper (9 & 10) 42.
3969	WetPaint Industrial Revol. (11 & 12) 42.
3970	WetPaint Old Earth Almanac (13 & 14) 42.
3971	WetPaint Island Life (15 & 16) 42.
4940	the contract of the last of th
5000	Electronic Arts 30 day MBG
	Studio/1 1.0
4315	Studio/8 1.0
1601	ScreenRecorder 1.0 125.
2100	MacRecorder 2.0
6770	
	Foundation Publishing 60 day MBG
	Comic People Vol. 1 (Office Days) 21.
6646	Comic People Vol. 2 (Kids Stuff) 21.
6728	Comic Strip Factory 1.6 38.
OILO	Generic Software 60 day MBG
4319	
	Good Software 30 day MBG
5428	NuPaint 1.0.4 special 69.
	Innovative Data Design
2417	MacDraft 1.2B 169.
4707	Dreams 1.1
	Letraset
2621	Ready Set Gol 4.5A

2619	ImageStudio 1.5	\$275.
4709	LetraStudio 1.0	
6300	FontStudio 1.0	
6302	DesignStudio 1.0	
6301	ColorStudio 1.0	
*	Linguist's Software 60 day N	
	Over 100 language fonts	. call
2636		. 59.
2645	Chinese Mandarin	. 79.
2638	LaserCyrillic	. 99.
*	MacroMind 30 day MBG	
6159	MacroMind Accelerator	125.
5087	MacroMind Director 1.01	439.
*	MicroMaps 30 day MBG	
5516		. 45.
5514	MacAtlas EPSF 1.0 (PostScript)	105.
5513	MacAtlas Professional 1.0 (PICT)	105.
*	Microsoft 30 day MBG	
2878	PowerPoint 2.01	245.
	Mindscape	
5768	ZING 1.0	125.
	NEC	
	Image Gallery, Photo Gallery, Type	
	Gallery PS (CD-ROM titles) . each	279.
6625		399.



and me translation software \$107.			
	Paracomp		
4597	Paradicina Property (Property Control of the Contro		
5028	ModelShop 1.0		
	Preferred Publishers 30 day MBG		
5751			
	Quark		
3230	Quark XPress 2.12 469.		
*	Silicon Beach 60 day MBG		
3506	SuperPaint 2.0 125.		
	Personal Press 199.		
	Digital Darkroom 1.1 248.		
	Super3D 2.1		
	Softstream Int'l., Inc 30 day MBG		
	UltraSpec 1.0 95.		
	Solutions, Inc 60 day MBG		
	The Curator 1.05 71.		
	Springboard 30 day MBG		

Network Bundle for Macintosh 3.0—Allows you to quickly and easily share files and send electronic mail. Also includes print spooling and file translation software \$187.			
	Paracomp		
597	Swivel 3D 1.1	295	
)28	ModelShop 1.0	375	
7	Preferred Publishers 30 day M	BG	
751	Exposure 1.03	. 52	
	Quark	400	
230	Quark XPress 2.12	469	
ine.	SuperBoint 2.0	125	
274	SuperPaint 2.0		
280	Personal Press	248	
507	Super3D 2.1	315	
	Softstream Int'l., Inc 30 day		
996	UltraSpec 1.0	. 95	
	Solutions, Inc 60 day MBG		
146	The Curator 1.05	. 71	
*	Springboard 30 day MBG		
	Certificate Maker 2.0		
197	Top Honors 1.01	. 57	
	Springboard Publisher II 2.0	107	
-44	Strategic Mapping	010	
110	Exstatix	219	
010	ATLAS-MapMaker 4.0	209	

- 1	SuperMac Tech 60 day MB	G
3380	PixelPaint 2.0	
5625	PixelPaint Professional 1.0	
	3G Graphics	
3942	Images with Impact: Graphics 1.	50.
4583	3	
6379		65.
*	Timeworks 30 day MBG	
5908	Publish-it! 1.1.1	. 223.
	T/Maker 30 day MBG	
6900	ClickArt Business Cartoons	
3633		39.
3635	EPS Illustrations	82.
	EPS Business Art	
	Wayzata Tech 60 day MBG	
	Vietnam Remembered (CD-ROM)	
	Quick Art (CD-ROM)	. 175.
	Wildflower 30 day MBG	
	SnapJot 2.0	32.
	Zedcor 60 day MBG	
3986	DeskPaint & DeskDraw 3.0	. 115.

### **PROGRAMMING & HYPERMEDIA**

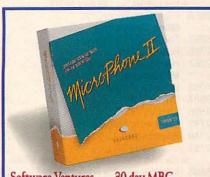
,		
*	Antic Software 30 day MBG	
6100	HOT-SPOT	42.
	Apple Computer	
1118	HyperCard 1.2.5	. 42.
	Bantam Publishing	
	Complete HyperCard Handbook .	
	Beacon Technology 30 day N	
6426		
4967	HyperBible 1.0 (King James)	
4968	HyperBible 1.0 (New International)	175.
	Borland	
1511	Turbo Pascal 1.1	
1512	Turbo Pascal Tutor 1.0	46.
	Broderbund Software	
	Whole Earth Catalog (CD-ROM)	89.
	Digitalk 60 day MBG	405
	SmallTalk/V Mac 1.1	125.
	Dream Maker 30 day MBG	07
	MacGallery (HyperCard)	
	Foundation Publishing 60 day	
6701		. 29.
1222	Hyperpress Publishing	4E
	Icon Factory 1.0	
3009	Script Library 1.0	. 59.
_		



Timeslips ... 30 day MBG
Timeslips III 2.0—Fast, easy, accurate time and billing for service professionals. DA stopwatch timer can be accessed while in other applications. Many new customization features. Network Edition available soon . . . . . \$169.

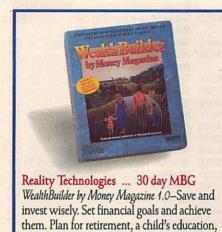
### that you've bought,

	ICOM Simulations	
5681	HyperTMON 1.0	\$58.
4085	TMON 2.8.4	. 87.
	Individual Software	
4719	101 Scripts & Buttons HyperCard 1.0	. 35.
	Manx Software 60 day MBG	CO TOWNS
4075	Aztec C + SDB 3.6B	95.
	MicroMaps 30 day MBG	
	HyperAtlas 1.0	59.
-	Microsoft 30 day MBG	
4471	QuickBasic 1.0	64
	Millenium Software 30 day M	
	HyperX 3.0	
1	Now Software 30 day MBG	
6739	Prototyper 2.1	185.
*	Silicon Beach 60 day MBG	
5100	SuperCard 1.5	189.
	Inside SuperCard (Microsoft Press)	
	Softstream Int'l., Inc 30 day	
	Authenticate & Mutate	
	HyperHIT 2.2	
*	Somak Software 30 day MBG	
5897	ScriptEdit 1.1	49.
*	Springboard 30 day MBG	
4495	Family Matters 1.0	28.
6692	PLUS 1.11	115.
	Symantec 30 day MBG	E .
	Just Enough Pascal 1.0	52.
	THINK Pascal 3.0	
	THINK C 4.0	
		100



Software Ventures ... 30 day MBG
MicroPhone II 3.0—New version of top-selling
telecom software. Build graphic front-ends to
remote services & corporate mainframes. Supports XCMDs & XFCNs, ZMODEM, icons,
European languages, color & sound . . . . \$215.

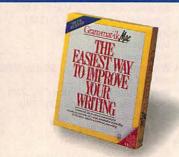
★Symmetry 30 day MBG
3318 HyperDA 1.2 45.
★TGSS 30 day MBG
6667 Prograph 1.2 125.
★TML Systems 30 day MBG
3549 TML Pascal II 3.0 (w/MPW 3.0) 109.
Trendware
5202 HyperTools #1 1.02 52.
5199 HyperTools #2 1.04 52.
5609 XCAL 1.0



True BASIC, Inc.

	k Zedcor 60 day MBG	Cal
3985	ZBasic 5.0	88.
	UTILITIES	
7	Abbott Systems 30 day MBG	
5236	CanOpener 1.1	63.
1010	Affinity Microsystems 60 day I	VIBG
1016	Tempo II 1.02	12.
6160	Shortcut 1.0.2.	16
	Stufflt Deluxe 1.0	
0740	Berkeley Systems 30 day MB	G
	After Dark 1.1	
1541	Stepping Out II 2.02	49.
	Bravo 30 day MBG	
	SPAMM 1.1	48.
7	Casady & Greene 60 day MB	G
2269	QuickDEX 1.4A	31.
	CE Software 60 day MBG	
	MockPackage Plus Utilities 4.4	
1727	CalendarMaker 3.0	. 31.
6278	DiskTop 4.0.	63.
1/29	QuicKeys 1.2	63.
E040	Central Point 30 day MBG	22
5040	Copy II Mac 7.2	23.
	Connectix 30 day MBG	13.
	Virtual 2.02 (for SE/30, Ilcx, Ilx, & Ilci)	115
6122	Virtual 2.02 (for Mac II, incl. PMMU) .	188
1	Dantz Development 30 day M	BG
5255	Retrospect 1.1	149.
	Dubl-Click Software	
6653	MenuFonts 3.0	30.
1824	Calculator Construction Set 2.05	45.
	Electronic Arts 30 day MBG	
1012	Dick Tools Blue 1 01 (Patteries Incl.)	21

,	★Fifth Generation 30 day MBG	
4287		22
3954	PowerStation 2.5.2	33
3955		43
5178		06
5725	DiskLock 1.0	06
7	★HJC/Microcom 30 day MBG	
4803		52
5885	Virex (10 Pack)	
	ICOM Simulations	
4084	On Cue 1.3	35.
7	Insight Development 30 day Mi	3G
6173		79
6171	MacPrint 1.2	94
7	JAM Software 30 day MBG	
6089	Smart Alarms w/Appt. Diary 2.9.1	49
6088	Smart Alarms 3.02 (1-4 users)	99.
6087	Smart Alarms (5-8 users) 1	49
6086	Smart Alarms (9-15 users) 1	99
7	Kent Marsh Ltd 30 day MBG	
5457	QuickLock 1.0	56
2591		85.
6134	MacSafe II	07
7	Kiwi Software 60 day MBG	
6267	KiwiEnvelopes! 3.0	34.
	Loop Software 30 day MBG	
5442	PictureBook 3.2	39.
	Microlytics 60 day MBG	
2732	GOfer 2.0	45.
7	Microseeds Pub 60 day MBG	
4848		25.
	Screen Gems 1.0	
2913		49.
7	Now Software 30 day MBG	
6924		45.
6925	Now Utilities	89.
	Olduvai	
4503	MultiClip 1.01	49.
1	ON Technology 1 year MBG	
6385	On Location 1.0	75.
-		



Reference Software ... 30 day MBG
Grammatik Mac 1.0—New! Powerful writing aid. Checks for grammar, style, usage, punctuation and spelling errors in one pass.
Detects over 10,000 writing errors and gives you instant, complete advice..........\$51.

170C

MacConnection®

1843 Disk Tools Plus 1.01 (Batteries Incl.). 31.

### Just call us toll-free

Aladdin Systems 30 day MBG  Stufflt Deluxe 1.0—The new generation of the standard for compression, security, and archiving software has over 75 new features. Includes "Magic Menu" Finder extensions for working from Apple's Finder

*	Peter Norton 30 day MBG
	Norton Utilities for the Mac 73.
	Preferred Publishers 30 day MBG
6656	Personality!49.
*	Software Innovations 30 day MBG
5869	HandOft 1.1
	HandOff II
*	Solutions, Inc 60 day MBG
	SmartScrap & The Clipper 2.1 45.
3449	SuperGlue II 2.01 61.
*	SuperMac Tech 60 day MBG
3383	SuperSpool 5.0 58.
3382	SuperLaserSpool 2.02 87.
3378	SuperLaserSpool 5-Pack 2.02 289.
3377	DiskFit 1.5
3379	Network DiskFit 1.5 225.
3381	Sentinel 2.0 87.
*	Symantec 30 day MBG
5176	
	Symantec Utilities for Mac (S.U.M.) 99.
	rSynex 30 day MBG
6665	MacPhonebook 51.
6666	
	Williams & Macias 30 day MBG
6926	
3780	
	LaserWriter Label Pack (Qty. 216) 18.
4976	StickyBusiness 1.2 89.
	StickyBusiness Plus 1.2 149.
	XTree 30 day MBG
5177	XTreeMac 1.02 50.
	LEADN & DLAV

	LEARN & PLAY	
	Access Software	
4655	World Class Leader Board Golf 25	
	Accolade	
1184	Hardball (CP) 26	
4484	Mean 18 (CP) 26	
4485	4th and Inches (CP) 26	
6760	Test Drive II-The Duel	
	Activision	
4475	Quarterstaff (CP)	
4486	Manhole	
5127	Manhole (CD-ROM)	
5517	Cosmic Osmo 40	
-1	r Ars Nova 30 day MBG	
1215	Practica Musica 2.2 69	

*	Bogas Productions 60 day MBG
4255	Super Studio Session 2.0 \$65.
	Bright Star Technology
3961	Talking Tiles 1.0
1402	Alphabet Blocks 1.0 30.
	Broderbund Software
4314	Type! 1.0
5886	Star Wars (CP) 23.
4099	Shufflepuck Cafe (CP)
1421	Ancient Art of War (CP) 26.
4540	Ancient Art of War at Sea (CP) 26.
6516	The Playroom (CP) 26.
4229	Where/World Carmen Sandiego? (CP) 29.
5755	Where/Europe Carmen Sandiego?(CP) 29.
5233	Where/USA Carmen Sandiego? (CP) 29.
6384	PlayMaker Football (CP) 29.
1423	Jam Session 1.1 (CP) 29.
4966	SimCity 1.1
5871	SimCity Supreme 47.
1422	Geometry 1.2 (CP) 58.
4067	Calculus 1.2 (CP) 58.
1426	Physics 1.2 (CP) 58.
7	Bull City Software 30 day MBG
5841	Moriarty's Revenge (CP) 32.



### Shiva ... 30 day MBG

NetModem V.32-9600 bps AppleTalk shareable modem. Also includes Dial-In Network Access and remote network-to-network routing. Fully compatible with the V.32 high-speed industry standard . . . . . . . . . . . \$1429.

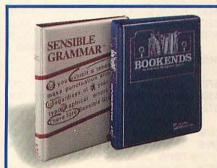
	Bullseye	
545	Fokker Triplane 2.02 (CP) 23.	
544	Ferrari Grand Prix (CP)	
074	P51 Mustang Flight Simulator (CP) . 31.	
	Carina Software	
726	Voyager 1.2 89.	
	Casady & Greene 60 day MBG	
268	Crystal Quest 2.2T 25.	
119	Crystal Quest w/Critter Editor 2.2T . 39.	
110	Coda Music Systems	
854	MusicProse 1.0	
604		
004		
	Davidson & Associates	
734	Math Blaster! 1.0 (CP) 26.	
128	Math Blaster Mystery (CP) 26.	
978	Speed Reader II 1.0 (CP) 26.	
7	Electronic Arts 30 day MBG	
850	Reach for the Stars 26.	
297	Halls of Montezuma 26.	
716	Pipe Dreams 26.	
663	Sands of Fire 29.	
554	Bard's Tale	
064	Chuck Yeager Flight Simulator 32.	
981	Starfleet 1	

6594	Starflight	POO.
1846	Deluxe Music Construction Set 2.5.	84.
	First Byte 30 day MBG	
5294	Puzzle Storybook 1.0 (ages 3-8)	27.
18/4/10/6/PT	Fuzzie Storybook 1.0 (ages 3-6)	
5293	Dinosaur Discovery Kit 1.0 (ages 3-8).	27.
3941	SmoothTalker 3.0	32.
3936	KidTalk 2.0 (ages 5-15)	32.
*	Great Wave 30 day MBG	
2276	KidsTime 1.2 (ages 3-8)	26.
THE R. P. LEWIS CO., LANSING, MICH.	Kidstille 1.2 (ages 3-6)	
5642	KidsMath 1.1 (ages 3-8)	26.
4334	NumberMaze 1.1 (ages 5-12)	26.
2270	American Discovery 2.3 (ages 9 +).	26.
2273	ConcertWare + 4.0	38.
2271	ConcertWare + MIDI 5.0	98.
		30.
-	HyperGlot 30 day MBG	
	Word Torture - Beginner to Advanced	
	(Span., Fren., Germ., Ital. & Rus.) ea.	29.
	Pronunciation Tutor - Beginner	
	(Spanish, French, German) ea.	35
		00,
	Verb Tutor - Intermediate	1000
	(Spanish, French, German) ea.	
6604	Verbal Aspect - Inter. (Russian)	42.
6611	Kanjimaster - Beg. (Japanese)	
	Inline Design 30 day MBG	
E070	Bomber (includes headphones)	00
3070	bomber (includes rieauphones)	20.
	1 O OO 1	
	Learning Company 30 day ME	
2670	Reader Rabbit 2.1 (CP) (ages 4-7)	30.
	Reader Rabbit 2.1 (CP) (ages 4-7)	30.
2670	Reader Rabbit 2.1 (CP) (ages 4-7) Talking Math Rabbit 1.0 (ages 4-7) .	30.
2670 5453	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse	30.
2670 5453 4697	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP)	30.
2670 5453 4697	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP)	30. 30.
2670 5453 4697	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7).  MicroProse Pirates! (CP) Microsoft 30 day MBG Flight Simulator (CP)	30. 30.
2670 5453 4697	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing	30. 30. 35. 32.
2670 5453 4697	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing	30. 30. 35. 32.
2670 5453 4697 2868 5253	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery	30. 30. 35. 32. 26.
2670 5453 4697 2868 5253 2765	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP)	30. 30. 35. 32. 26. 32.
2670 5453 4697 2868 5253	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP).	30. 30. 35. 32. 26. 32.
2670 5453 4697 2868 5253 2765 2767	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP). Mindscape	30. 30. 35. 32. 26. 32. 32.
2670 5453 4697 2868 5253 2765 2767 4083	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery. Fool's Errand Harrier Strike Mission II (CP) Mindscape Balance of Power 1990 (CP)	30. 30. 35. 32. 26. 32. 32. 29.
2670 5453 4697 2868 5253 2765 2767	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery. Fool's Errand Harrier Strike Mission II (CP) Mindscape Balance of Power 1990 (CP)	30. 30. 35. 32. 26. 32. 32.
2670 5453 4697 2868 5253 2765 2767 4083	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery. Fool's Errand Harrier Strike Mission II (CP) Mindscape Balance of Power 1990 (CP)	30. 30. 35. 32. 26. 32. 32. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery. Fool's Errand Harrier Strike Mission II (CP) Mindscape Balance of Power 1990 (CP)	30. 30. 35. 32. 26. 32. 32. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery. Fool's Errand Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP) Deja Vu II (CP) Crossword Magic (CP)	30. 30. 35. 32. 26. 32. 32. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowqate (CP).	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowqate (CP).	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749 2751	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowgate (CP). Uninvited (CP). Penton Overseas 30 day MBG	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowqate (CP).	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749 2751	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowgate (CP). Uninvited (CP). Penton Overseas 30 day MBG VocabuLearn/ce French (level 1).	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749 2751 5864 5887	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowgate (CP). Uninvited (CP). Penton Overseas 30 day MBG VocabuLearn/ce French (level 1). VocabuLearn/ce French (level 2).	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749 2751 5864 5887 5865	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand. Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowgate (CP). Uninvited (CP). Penton Overseas 30 day MBG VocabuLearn/ce French (level 1). VocabuLearn/ce French (level 2). VocabuLearn/ce Italian (level 1).	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29. 29. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749 2751 5864 5887	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowgate (CP). Uninvited (CP). Penton Overseas 30 day MBG VocabuLearn/ce French (level 1). VocabuLearn/ce French (level 2).	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29. 29. 29.
2670 5453 4697 2868 5253 2765 2767 4083 3987 4596 2743 2749 2751 5864 5887 5865	Reader Rabbit 2.1 (CP) (ages 4-7). Talking Math Rabbit 1.0 (ages 4-7). MicroProse Pirates! (CP). Microsoft 30 day MBG Flight Simulator (CP). Miles Computing The Puzzle Gallery Fool's Errand. Harrier Strike Mission II (CP). Mindscape Balance of Power 1990 (CP). Colony (CP). Deja Vu II (CP). Crossword Magic (CP). Shadowgate (CP). Uninvited (CP). Penton Overseas 30 day MBG VocabuLearn/ce French (level 1). VocabuLearn/ce French (level 2). VocabuLearn/ce Italian (level 1).	30. 30. 35. 32. 26. 32. 32. 29. 29. 29. 29. 29. 29. 29. 29. 29. 2



### Farallon Computing ... 30 day MBG Media Tracks-A full set of editing and annotating tools, lets you "tape" whatever takes place on your Macintosh screen, for later viewing. Ideal for creating training tapes . . . . . \$189.

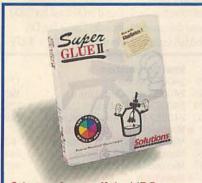
### with your Mac mystery



### Sensible Software ... 30 day MBG

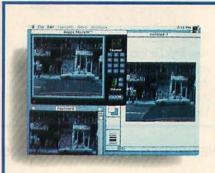
5867	VocabuLearn/ce Spanish (level 1)	29.
5891	VocabuLearn/ce Spanish (level 2)	29.
5868	VocabuLearn/ce German (level 1)	29.
5888	VocabuLearn/ce German (level 2)	29.
6639	VocabuLearn/ce Russian (level 1)	29.
6640	VocabuLearn/ce Russian (level 2)	29.
6638	VocabuLearn/ce Hebrew (level 1)	29.
5866	VocabuLearn/ce Japanese (level 1).	35.
5864	VocabuLearn/ce Japanese (level 2).	35.
	Personal Training Sys 60 day MB	
x- 1	Personal Training for Excel	~
5573	XL1 Beginning Spreadsheets	36.
5574	XL2 Intermediate Spreadsheets	36.
5575	XL3 Advanced Spreadsheets	36.
5576	XL4 Creating Business Graphics	36.
6021	XL5 Building Databases	36.
6020	XL6 Beginning Macros	36.
6367	XL7 Advanced Macros	36.
0307	Personal Training for Macintosh	50.
5263	B1 The Basics (for 2 floppy drives).	36.
5264	B2 The Basics (for Plus or SE w/HD)	36.
5265	B3 The Basics (for Mac II w/HD)	36.
5266	B4 Beyond the Basics	36.
3200	Personal Training for Word	30.
4947	W1 Beginning Level	26
		36. 36.
4854	W2 Intermediate Level	36.
5089 5418	W3 Advanced Level	36.
5418	W4 Additional Features	30.
FOCO	Personal Training for Persuasion	20
5269	LP1 Beginning Persuasion	36.
5270	LP2 Intermediate Persuasion	36.
5271	LP3 Creating Auto Templates	36.
5272	LP4 Creating Artwork	36.
	Personal Training for HyperCard	
5194	H1 Using HyperCard	36.
5195	H2 Creating Cards & Stacks	36.
5267	H3 Basic Scripting	36.
5268		36.
	Personal Training for PageMaker	
4852	P1 Beginning PageMaker	36.

4853	P2 Intermediate PageMaker	\$36.
5096	P3 Tips & Techniques	. 36.
5097	P4 Advanced Features	
	Personal Training for Works	
5196	M1 Database & Form Letters	
5197	M3 Advanced Databases	. 36.
5273	M3 Spreadsheets	
5274	M4 Word Processing	. 36.
	Personal Training for Illustrator 88	
5259	A1 Beginning Illustrator	
5260	A2 Intermediate Illustrator	
5261	A3 Creating Special Effects	
5262	A4 Precision Drawing Techniques.	. 36.
	Personal Training for FileMaker	
5278	FM1 Beginning FileMaker	
5279	FM2 Intermediate FileMaker	
5280	FM3 Advanced FileMaker	. 36.
5281	FM4 Tips & Techniques	. 36.
warran amari	Personal Training for FreeHand	00000
6353	FH1 Beginning Level	. 36.
-	Postcraft	020
6466	Citadel	. 27.
	Premier Technology	
5773	Strategic Conquest Plus 2.0	
5774	NetTrek—The Real Version 2.3	. 34.
0007	Sierra On-Line	00
3397	Leisure Suit Larry (CP)	
5694	Manhunter: San Francisco (CP)	. 28.
5458	Manhunter: New York (CP)	28.
3394	King's Quest (CP)	28.
3396	King's Quest III (CP)	. 28.
3398	Police Quest (CP)	28.
3399	Space Quest (CP)	28.
	Space Quest II (CP)	. 20.
3501	Silicon Beach 60 day MBG	32.
3502	Apache Strike	32.
3503	Dark Castle	32.
3303	Dair Casile	02.



★Softstream Int'I., Inc. ... 30 day MBG 4071 Mac•Man. . . . . . . . . 23.

4072	The Solitaire DA \$23.
4995	Cribbage Tutor 26.
6259	22nd Street Whist Tutor 32.
	MacRummy
	Colour Billiards 38.
1	Software Toolworks 30 day MBG
	The Hunt for Red October 20.
1842	Chessmaster 2000 (CP) 28.
4619	Mavis Beacon Typing 1.2B (CP) 32.
4588	Life & Death (CP)
6111	Cribbage King-Gin King 39.
	30.5 (Sec. 5.5)



lapps

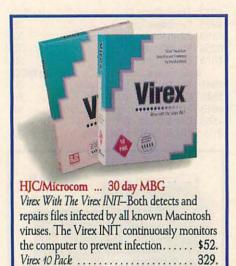
DigiVideo 1.0—Gives users real-time video and television on the Mac desktop and offers a large (3" x 3.5") screen option with a HyperCard based construction kit . . . . \$399.

*	Spectrum Holobyte 30 day Mi	3G
4001		19.
3464	Tetris 1.1 (for Mac II & SE)	19.
6112	Welltris (for Mac II & SE)	19.
3462	PT-109	25.
3460	GATO	25.
3459	Falcon 2.2	30.
*	Spinnaker 30 day MBG	
2328	Sargon IV (CP)	28.
2329		57.
	SubLogic 60 day MBG	
4698	Jet (CP)	31.
*	Think Educational 60 day MB	G
3615	MacEdge II 1.0 (CP) (ages 6-12)	27.
0574	True BASIC, Inc.	45
3571	Algebra (with workbook)	45.
3580 3575	Pre-Calculus (with workbook)	45.
6110	Calculus (with workbook)	45. 45.
	Unicorn 30 day MBG	45.
3751	Animal Kingdom (CP) (ages 6-12)	27
3756	Math Wizard (CP) (ages 5-10)	
-	Wayzata Tech 60 day MBG	
	The World Factbook 1989 (CD-ROM)	69.
	XOR 30 day MBG	7.20
6152		27.
6038	Road Racer (CP)	38.
6040	MacGolf Classic (CP)	52.
3815	NFL Challenge 1.2 (CP)	54.

170C

MacConnection ®

### Andwe'll make sure



2206	PhoneNET StarController	
6687	PhoneNET StarController-EN	
2205	Star Wiring Kit (Punchdown)	. 64
5893	Portable Pack (incl. two copies each Timbuktu & Timbuktu Remote, two	h of
	StarConnectors, and accessories).	329
6778	Remote/Wakeup Cable	
6766	MediaTracks	
6767	MediaTracks Multimedia CD Pack.	
6768	Media Tracks Multimedia Pack	
		315
	Freesoft 60 day MBG	0.5
6115	White Knight 11	. 85
	Hayes	
2300	Smartcom II 3.1A	. 84
2307	Smartmodem 2400	349
5170	2400 Internal Modem for Mac II	349
6654	V2400 Internal Modern w/software	399
6655	V2400 Baud Modem	439
5991	V9600 Baud Modem	759
2298	InterBridge	639
LLUU	Insignia Solutions	000
4089	SoftPC 1.3	245
6688	SoftPC for the Mac Portable	
0000	Solt C for the Mac Portable	240

4942	TeleBridge \$3	39
3443	NetModem V2400 4	35
6917	NetModem V.32 14	29
6519	EtherGate	29
*	Software Ventures 30 day MBC	
	MicroPhone II 3.0 2	
	Solutions, Inc 60 day MBG	
6721	MailMaker 5 User Pack 1	17
4308	BackFAX (regs. Apple FAX modem). 13	
	FAXGATE Plus 23	
	Synergy 30 day MBG	
	VersaTerm 4.1.1	88
	VersaTerm-PRO 3.1.1 1	
	TOPS 30 day MBG	
4598	TOPS FlashBox 1	18
3725	TOPS Repeater 1	19
	TOPS Flashcard	
	TOPS Networking Bundle 3.0 18	
	InBox Mac Administrator (20 user). 2	
*	Traveling Software 60 day MBC	à
3729		
6741		
	INPUT/OUTPUT	

### **NETWORKS & COMMUNICATIONS**

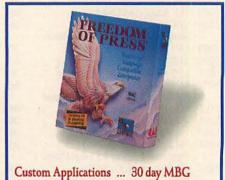
,	Abaton 30 day MBG
4589	
6266	
	CE Software 60 day MBG
5636	In/Out (5 users)
5638	In/Out (10 users) 187.
5174	QuickMail 2.2 (5 user Pak) 215.
5173	QuickMail 2.2 (10 user Pak) 315.
	CompuServe 60 day MBG
1676	CompuServe Information Service 23.
1673	CompuServe Navigator 2.1 39.
1674	Standard Service/Navigator Bundle 59.
	Connect, Inc.
5834	Connect 1.5 for the Macintosh 63.
*	DataViz 60 day MBG
1823	
4842	MacLink Plus/Translators 4.12 99.
	Dove Computer 60 day MBG
	DoveFax Desktop
4939	FastNet III
4938	FastNet SE
5624	FastNet SE/30 375.
4937	FastNet SCSI 749.
5391	FastNet LAN 1 949.
5390	FastNet LAN 2 (1 Meg) 1349.
5389	FastNet LAN 3 (math chip) 1219.
5388	FastNet LAN 4 (1 Meg/chip) 1549.
5387	FastNet LAN 5 (4 Meg) 1439.
5386	FastNet LAN 6 (4 Meg/chip) 1679.
	Dow Jones 30 day MBG
5295	News/Retrieval Membership Package 24.
1785	Desktop Express 1.03 95.
	Farallon Computing 30 day MBG
5707 4866	Timbuktu/Remote 1.0.1
6371	Timbuktu/Remote Access Pack 849.
4867	Timbuktu 30-Pack 3.0 1285.
2201	TrafficWatch 1.08
2202	PhoneNET to LocalTalk Adapter 8.
5664	PhoneNET StarConnector 19.
6273	PhoneNET StarConnector 10-Pack . 129.
2203	PhoneNET Connector (DIN-8)31.
4869	PhoneNET Connector 10-Pk (DIN-8) 198.
5251	PhoneNET CheckNET 64.
4868	PhoneNET Repeater
1000	The letter repeated The transfer of the



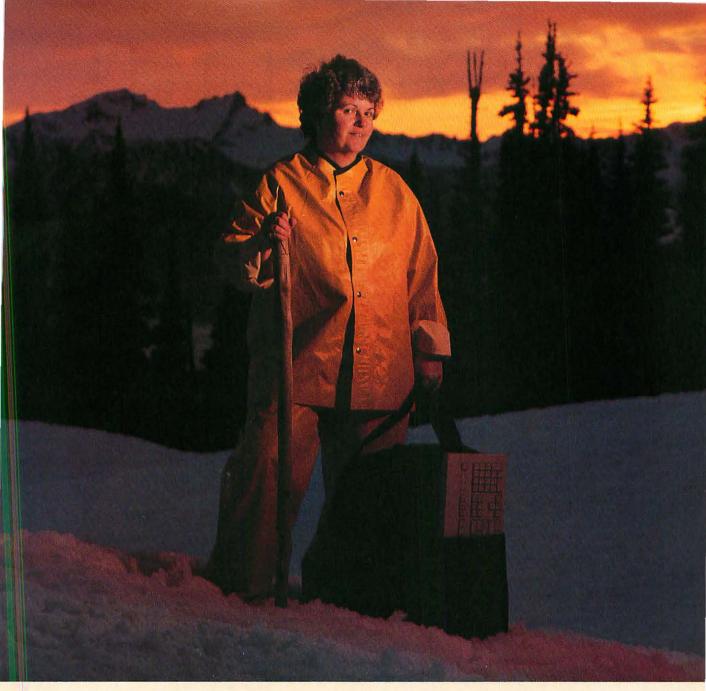
Dove Computer ... 60 day MBG
DoveFax Desktop—The lowest cost, highest
function true background 9600 baud fax/2400
baud data modem. Includes Quick Fax DA
and full-featured Dove software ..... \$279.

	Intel Corporation
5119	2400EX Modem 179.
6265	2400EX with QuickLink II 195.
6420	2400EX MNP Modem 229.
6650	2400EX MNP with QuickLink II 249.
7	Microsoft 30 day MBG
5858	Microsoft Mail 2.0 Workstation 83.
5856	Microsoft Mail 2.0 Server 245.
5857	Microsoft Mail 2.0 (20 pack) 965.
1	Nuvotech 60 day MBG
3000	TurboNet ST (DIN-8)
6751	TurboNet ST (12-Pack) 279.
5277	TurboBridge
6272	NuvoLink SC
6750	NuvoLink II
6261	TurboStar
	Orchid Technology
	OrchidFAX Modem
	Practical Peripherals 30 day MBG
3102	2400 Baud External Modem 179.
5285	PM 2400SA MNP Modem 209.
	Mac Communications Pack 1.5 225.
	Shiva 30 day MBG
3444	
4347	NetBridge

*	American Power 30 day MBG
5895	110SE (UPS)
6686	370ci (UPS) 279.
	Apple Computer
6717	Midi Interface 84.
6714	Apple Hi Res Color 13" Monitor 849.
6719	Apple Portrait Display 899.
	Brother International
6934	HL-8PS Laser Printer 3299.
	Caere
4476	OmniPage 2.1 539.
	OmniSpell or OmniDraft each 69.
	OmniTrace or OmniProof each 105.
	CoStar 30 day MBG
6090	LabelWriter 185.
6067	LabelWriter Labels
	Cuesta Systems
1607	DataSaver 200W
1608	
*	Datadesk 30 day MBG
1818	HyperDialer 32.



Freedom of Press 2.1A—1990 MacUser Editors'
Choice Awards for Software Product Of The Year
and Best Graphics/Publishing Utility. Brings
PostScript-printing capabilities to non-PostScript output devices.....\$255.



### "I live at the end of the known world."

Dear MacConnection,

I live on the Olympic Peninsula which, technologically speaking, is the end of the known world. The closest Apple dealer is 90 miles away. Yesterday your technical support team really saved my sanity. I had been pulling my hair out by the roots trying to solve a computer problem. I went over everything I'd

done with Allen in your tech support department and asked, "Do I have you stumped?" He replied, "Yes, but we don't give up that easily," and consulted with his coworkers. He then instructed me on re-installing everything, and it worked! Your technical support is great; I can't thank them enough. They helped

me for about an hour until everything worked, even though it wasn't really their problem.

Candy Flagg
Port Angeles, WA

### MacConnection ®

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791

© Copyright 1990 PC Connection, Inc. MacConnection is a division and registered trademark of PC Connection, Inc., Marlow, NH.

Just for the record, all the ads in this series feature photographs of real live MacConnection customers and the real live letters they wrote us. Really!

### Call 800/334-4444.

*	Avery 60 day MBG
4864	Disk Labels 31/2" (Qty. 250) \$13.
5392	Disk Labels 31/2"-Laser (Qty. 630) 29.
5403	Address Labels 17/16" x 4" (Qty. 1000) 9.
4865	Address Labels 31/2" x 15/16" (Qtv. 3750) 15.
4811	Address Labels 31/2" x 15/16" (Qty. 3750) 15. Transparencies 81/2" x 11" (Qty. 50) 22.
4813	Round Labels 31/3" (Qty. 150) 7.
4812	Laser Labels 1/2" x 13/4" (Qty. 2000) . 7.
4807	Laser Labels 1" x 25/8" (Qtv. 3000) 24.
4808	Laser Labels 1" x 25/8" (Qty. 3000) 24. Laser Labels 11/2" x 4" (Qty. 1400) . 24.
4809	Laser Labels 2" x 4" (Qty. 1000) 24.
4810	Laser Labels 81/2" x 11" (Qty. 100) . 24.
	Basic Needs 60 day MBG
5635	Keyboard Flip
3033	Hard Cover-Keyboards each 15.
6682	Hard Cover-ImageWriter II 16.
	Computer Coverup 60 day MBG
1723	
4657	LaserWriter II Cover
1720	Mac Plus Cover
1724	
1725	Mac SE Ext. Keyboard Cover set 10.
	CoStar 30 day MBG
6091	The Organizer 199.
	Curtis Manufacturing
6733	
	Goldstein & Blair 30 day MBG
2267	
	rI/O Design 30 day MBG
2379	
2376	MacLuggage Macinware Plus 59.
2381	MacLuggage Macinware SE 75.
6129	The Ultimate SE/Ext. Carrying Case 79.
7	Kensington 30 day MBG
	MacConnection carries the entire
	line of Kensington's accessories.
2577	Mouseway Pad
2569	Mac Plus/SE w/System Sver Cover 9.
2558	ImageWriter II Dust Cover 9.
2589	Universal Printer Stand 15.
6722	LaserWriter II Security Kit 32.
2580	Mac II Stand 20.
4643	Mac II Stand
4941	Mac II Monitor Stand 64.
6895	Mac Ilcx Monitor Stand 54.
2579	Mac II Monitor Cable Extension Kit . 32.
2578	Extra Long ADB Keyboard Cable 24.
2545	Universal Copy Stand
2010	5111010a1 00py Otalia



Altsys

Metamorphosis 1.0—Powerful utility that converts your PostScript fonts into editable outlines which can be manipulated in programs like Fontographer, Aldus FreeHand, TypeStyler, Adobe Illustrator, and Quark XPress... \$149.

2573	Tilt/Swivel (platinum) \$2	22
4972		19
4973		27
4974		54.
2559	Apple Security Kit	33.
2568		33
2585		13
4070	System Saver SE	52
2566	System Saver Mac (platinum) 6	63
2567	System Saver Mac (beige) 6	33
2546		63
6763	SE Radiation/Anti-Glare Filter !	52
5064	Apple Color Monitor Polarizing Filter	33
5065	Full Page Display Polarizing Filter 6	33
5066		35
2561		05
5894	PowerBacker 360 26	69
5577		39
5578	PowerBacker 520	99
5230	PowerBacker 800	49
5228	PowerBacker 1200 94	19
4	MacConnection 60 day MBG	
4623	Solid Oak Disk Case (holds 90 disks) . 3	32



### Kensington ... 30 day MBG

PowerBackers—Standby ÚPS units engineered to protect any computer system against power outages, from a momentary dip in power to a complete blackout.

5 sizes available. . . . . see line listing.

*	Mobius Technologies 60 day MBG
	Fanny Mac QT 55
1	Moustrak 60 day MBG
2694	Moustrak Pad (standard 7" x 9") 8
2692	Moustrak Pad (large 9" x 11") 9
2693	Moustrak Pad L/F (9" x 11") 10
	Ribbons
	Available in black, blue, brown, yellow,
	green, orange, purple, red, silver & gold.
3255	ImageWriter II Ribbon Black 4
3261	ImageWriter II Ribbon Multi-4-Color . 9
3270	ImageWriter II Rainbow 6-Pack 20
3260	ImageWriter LQ Black Ribbon 17
7	Sopris Softworks 60 day MBG
4171	Mac SE Std. Keyboard Cover (navy) 15
4019	Mac SE & Ext. Keyboard Cover (navy) . 15
4017	ImageWriter II Cover (navy) 11
4018	LaserWriter II Series Cover (navy) 17
4012	High Trek ImageWriter II Carry Case . 49
4013	High Trek Mac Plus Carry Case 59
4014	High Trek Mac SE & Ext. Kybd. Case. 69
5839	Mac Ilcx CPU & Kybd, Carry Case . 69
4862	SE Protection Pak (ext. keyboard) 75
	Targus 60 day MBG
3618	ImageWriter II Carry Case 49



Cost-effective CD-ROMs featuring high-quality type, illustrations, and photos. Together with NEC's CDR35 portable CD-ROM drive, an unbeatable team . . . . . . see line listing.

3617	Mac Plus/SE Carry Case	59
4015	Mac SE & Ext. Kybd. Carry Case	79
6116	Mac Ilcx Carry Case	85
1	Tripp Lite 30 day MBG	
6199	Isobar 4 (surge suppressor, 4 outlets).	49
6200	Isobar 6 (surge suppressor, 6 outlets).	59

### **OUR POLICY**

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped First Class Mail.
   International orders LLS \$250 minimum.
- International orders U.S. \$250 minimum.
- Upon receipt and approval, personal and company checks clear the same day for immediate shipment of your order.
- Corporate P.O.s accepted subject to credit approval.
   COD may \$1000. Coch as actified sheet.
- COD max. \$1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- To order, call us anytime Monday through Friday 9:00 AM to 1:00 AM EST, or Saturday 9:00 AM to 5:30 PM EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 AM to 5:30 PM EST.

### SHIPPING

Continental US: Barring massive computer failures and other natural or unnatural catastrophes, all credit card orders phoned into MacConnection weekdays by 8 PM EST will ship Airborne Express the same night for delivery the next business day, except for those within UPS Ground Zone 1 (which is also an overnight service). Saturday delivery available to many areas upon request. Some areas require an additional day delivery. The total freight charge on any order placed with MacConnection is only \$3.

Hawall, Alaska, Canada, Puerto Rico and U.S.

Hawall, Alaska, Canada, Puerto Rico and U.S. Virgin Islands: Call 800/334-4444 for information on shipping and charges.

All other areas: Call 603/446-7711 or FAX 603/446-7791 for information.

### the culprit is caught.



### ON Technology ... 1 year MBG

On Location 1.0-This DA is the fastest way to find and view files. Find files by name or specific words they contain. Then view and copy text, including fonts and styles. Open, move, copy, rename, delete files ..... \$75.

6815	Function Key Module call
6813	Modular Trackball
1819	MAC-101 Kybd. (beige) special 129.
1820	MAC-101 Kybd. (platinum) special 129.
1821	MAC-101 Kybd. (platifulff) special 129.
	GDT Softworks 30 day MBG
6256	PrintLink Collection 3.01 59.
6151	JetLink Express 1.1 89.
6255	Expressive Fonts
6257	JetLink/Expressive Fonts Bundle 159.
-	Hewlett Packard
6514	HP DeskWriter Printer 859.
6689	HP DeskWriter & ATM Bundle 889.
	Kensington 30 day MBG
2576	Turbo Mouse for Mac Plus 3.0 109.
2547	Turbo Mouse ADB 3.0 109.
	Koala
2593	MacVision 2.1 219.
	Kodak
6730	DICONIX M150 Plus Printer 489.
*	Kraft Systems 60 day MBG
2600	
4082	3-Button QuickStick ADB 49.
6099	ADB Trackball (with foot pedal) 79.
*	Logitech 30 day MBG
5082	ScanMan Mac Model 32 319.
	Magnavox
6693	9CM080 14" Color Monitor 529.
6690	14" Color Monitor with Micron Xceed
	for SE/30 (640 x 480) special 849.
6691	14" Color Monitor with Micron Xceed
	for Mac II (640 x 480) special 849.
*	Micron 30 day MBG
6680	Xceed for SE/30 (640 x 480) 349.
6690	Xceed for SE/30 (640 x 480) and
	Magnavox 14" Color Monitor 849.
6679	Xceed for Mac II (640 x 480) 349.
6691	Xceed for Mac II (640 x 480) and
	Magnavox 14" Color Monitor 849.
6673	Xceed for SE/30 (1024 x 768) 589.
6672	Xceed for Mac II (1024 x 768) 589.
*	MicroSpeed 30 day MBG
6620	MacTRAC
6621	MacTRAC ADB
*	Mobius Technologies 60 day MBG
6126	Mobius Cordless Mouse 95.
*	Mouse Systems 30 day MBG
2808	A+ Mouse

2809	A+ Mouse ADB	\$75.
7	Nutmeg Systems 30 day MB	G
2994	15" Monitor for Mac SE	799.
6168	15" Monitor for Mac SE/30	799.
2993	15" Monitor for Mac II	799.
4096		1195.
5680	19" Monitor for Mac SE/30	1195.
4097	19" Monitor for Mac II	1195.
6240	30/2 Interface (SE/30 video board)	499.
	Olduvai Software	
5138	Read-It! OCR Personal 2.1	124.
3034	Read-It! OCR 2.1	245.
*	Orange Micro 30 day MBG	
4488	Grappler Spooler	. 47.
3036	Grappler C/Mac/GS 2.0	. 78.
6229	Grappler LX	129.
	SAFE Power Systems	
4561	SAFE 250 Watt Backup	199.
6747	SAFE 400S Watt Backup	409.
	TheComplete PC	
6104	Half-Page Scanner/400	309.
6103	Full-Page Scanner w/OmniPage	759.
	Thunderware	
3648	ThunderScan Plus ThunderWorks.	
4994	LightningScan 400	395.
	MEMORY & BRUTTO	
	MEMORY & DRIVES	

	1 Meg SIMMs 2 year warrant	y
1107	Low profile 80 nanosecond SIMMs	. 89
	Apple Computer	
6707	Mac Portable 1 Meg. Exp. Kit	549
*	Cutting Edge 30 day MBG	
3989	800K External Disk Drive	149
5133	20+ Meg Hard Drive	345
3990	30+ Meg Hard Drive	379
3991	45+ Meg Hard Drive	435
5275	60+ Meg Hard Drive	469
5276	80+ Meg Hard Drive	529
5456	45 Meg Removable Drive	699
5736	45 Meg Removable Cartridge	. 89
*	Dove Computer 60 day MBG	
1802	Dove Tool Kit	. 15
1801	SCSI Interface/Port	109
5879	MaraThon Serial/Parallel	195
6727	MaraThon 030 Serial/Parallel	189
6726	MaraThon 030 MultiComm	319
6725	MaraThon 030 for Mac II.	449



### Intel Corporation

2400EX MNP with QuickLink II—Delivers high quality communications with built-in error correction and data compression. Includes QuickLink II software, cable, and Intel's standard no-compromise 5 year warranty. \$249.

6723 MaraThon 030 for Plus 449 1807 MacSnap 524E 185 1809 MacSnap 524S 239 1811 MacSnap 54BE 419 1812 MacSnap 54BS 479 1804 MacSnap 2S 189 1805 MacSnap 4S 369 5623 MaraThon Racer 149 ★ Kennect Tech 30 day MBG 5631 Rapport 195 5632 Drive 2.4 (includes FastBack II) 325	6724	MaraThon 030 for SE \$449
1809       MacSnap 524S.       239         1811       MacSnap 548E.       419         1812       MacSnap 548S.       479         1804       MacSnap 2S.       189         1805       MacSnap 4S.       369         5623       MaraThon Racer.       149         ★ Kennect Tech.       30 day MBG         5631       Rapport       195	6723	MaraThon 030 for Plus 449
1809       MacSnap 524S.       239         1811       MacSnap 548E.       419         1812       MacSnap 548S.       479         1804       MacSnap 2S.       189         1805       MacSnap 4S.       369         5623       MaraThon Racer.       149         ★ Kennect Tech.       30 day MBG         5631       Rapport.       195	1807	MacSnap 524E 185.
1811       MacSnap 548E       419         1812       MacSnap 548S       479         1804       MacSnap 2S       189         1805       MacSnap 4S       369         5623       MaraThon Racer       149         ★ Kennect Tech       30 day MBG         5631       Rapport       195	1809	MacSnap 524S
1804       MacSnap 2S       189         1805       MacSnap 4S       369         5623       MaraThon Racer       149         ★ Kennect Tech       30 day MBG         5631       Rapport       195	1811	
1805       MacSnap 4S       369         5623       MaraThon Racer       149         ★Kennect Tech       30 day MBG         5631       Rapport       195	1812	MacSnap 548S 479.
5623 MaraThon Racer	1804	MacSnap 2S 189.
★Kennect Tech 30 day MBG 5631 Rapport	1805	MacSnap 4S 369.
5631 Rapport 195.	5623	MaraThon Racer 149
	*	Kennect Tech 30 day MBG
5632 Drive 2.4 (includes FastBack II) 325.	5631	Rapport 195.
	5632	Drive 2.4 (includes FastBack II) 325.



### Cutting Edge ... 30 day MBG

45 Meg Removable Drive—Offers the convenience of removable media with the reliability of Winchester technology. Features the popular Syquest mechanism and includes one cartridge . . . . . \$699. 

	1200-000
	NEC
6744	CDR35 CD-ROM Portable Drive 399.
6743	Mac Driver Kit 64.
7	SuperMac Tech 30 day MBG
	SuperMac drives include SuperSpool,
	SuperLaserSpool, Diskfit and Manager
5447	Dataframe XP 30 Hard Drive 599.
5448	Dataframe XP 60 Hard Drive 799.
5449	Dataframe XP 100 Hard Drive 1049.
5450	Dataframe XP 150 Hard Drive 1399.
5451	Dataframe XP 330 Hard Drive 2369.
	Toshiba
6749	XM 3201 CD-ROM Drive 899.
	222. 22

### STORAGE MEDIA

*	Sony 60 day MBG	
3297	31/2" DS/DD Disks (10)	13
	31/2" DS/DD Disks 3 Pak (30)	30
3298	31/2" HD Disks 1.44 Meg (10)	22
	31/2" HD Disks 3 Pak (30)	56
6659	QD2000 40 MB Data Cartridge	19
*	MAXELL 60 day MBG	
2792	31/2" DS/DD Disks (10)	14
2793	31/2" HD Disks 1.44 Meg (10)	27
*	3M 60 day MBG	
3943	DC2000 40 MB Data Cartridge	20
*	MacConnection 60 day MBG	
6592	44 Meg. Removable Cartridge	85
	ACCESSORIES	

	Apple Computer
1113	Black ImageWriter Ribbon 10
1114	LaserWriter Plus Toner Cartridge 99
1115	LaserWriter II Toner Cartridge 105



# Some.

All.

Why settle for an incomplete set of utilities when you can have them all? Introducing MacTools® Deluxe—the most comprehensive, powerful collection ever assembled for the Macintosh.

It lets you find misplaced files, recover crashed disks, undelete trashed files, backup your data, optimize volumes, secure files and folders, quickly copy floppies, organize folders, and even partition your hard disk.

Not only do you get the broadest range of utilities available, but each function sets new standards for performance. For instance, let's say you want to undelete a trashed file. Using a selective search, MacTools locates likely candidates and lets you view their contents prior to recovery—so you don't waste time or retrieve unwanted files. No other utility even comes close.

So why settle for some, when you can have it all?

MacTools Deluxe...from the leading developer of Macintosh utilities since 1984.

For the dealer nearest you or for additional information, call 1-800-888-8199.

Central Point Software INCTIN

Hand State Local Land					
×××××	×		Data Recovery File Undelete with View Minor File Repair Disk Protection Hard Disk Crash Recovery		
××××	×	××××	Hard Disk Backup Multiple File/Folder Selection Data Compression Multiple Setup Files		
×			File Locator DA		
×	×		Hard Disk Partitioning Automount w/Password Prompt		
×××	×		Hard Disk Optimization Complete Disk Erase Color Disk Map		
×	×		Secure/Encrypt File Desk Accessory		
×	×		Fast Floppy Copying		
×		i i	File Management		

15220 N.W. GREENBRIER PKWY. #200, BEAVERTON, OREGON 97006, (503) 690-8090

### ART BEAT

### by Cathy E. Abes and Jerry Borrell

The tools and the talent behind Macworld's graphics and the techniques that make them possible

Artists: For this month's cover illustration, Drew Huffman of Paracomp created a model from *Macworld* art director Joanne Hoffman's sketch; Huffman and Eliot Smyrl of Pixar then rendered the image.

Tools: Sun 3150 workstation; Mac IIcx with 40MB hard drive; RasterOps 24-bit board; 13-inch Apple color monitor; Paracomp's Swivel 3D; and Pixar's PhotoRealistic RenderMan.

How It Was Done: To get the most sophisticated image possible, we had to provide Pixar the underlying geometry for the image in a format acceptable to Pixar's RIB (RenderMan Interface Bitstream) software.

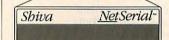
Huffman used an unreleased version of Swivel 3D (2.0) to create first wire-frame, and then shaded, models of a Macintosh, a 24-bit graphics board, and two additional surfaces that Pixar rendered as the floor and the star field in the final output. Using Swivel 3D Huffman built objects (such as the components on the circuit board) and set the camera position (viewing angle). He pulled the Mac from a file of Paracomp's tobe-released 3-D clip art.

Generating a reasonable facsimile of a Raster-Ops 24-bit board took Huffman about five hours. Tweaking the model, varying the geometry, resizing, and changing the viewing angle and perspective took about eight hours. He worked on a Mac IIcx with a RasterOps 264 board set for 8-bit operation.

The original DXF file was a whopping 4.5 megabytes, containing over 100,000 polygons—too large to be practical for ren-(continues)



### TWO WAYS TO SHARE PERIPHERALS





### ONE WAY TO SAVE MONEY



Silverplatter<sup>TM</sup> software lets you share almost any serial device on your Appletalk network. Silverplatter makes expensive peripherals, such as Hewlett-Packard® plotters, LaserJet® printers and Hayes® compatible modems available to any Macintosh on your Appletalk network.

Don't buy extra hardware when all you need is Silverplatter. If you have an AppleTalk® network, you better have Silverplatter.

Introductory Price \$99.95

Call (800) 999-0143. Dealer inquiries welcome. International or U.S. call (503) 684-0143. Fax: (503) 624-0919



La Cie and Silverplatter are trademarks of La Cie, Ltd. Product and company names are trademarks of their respective companies. Prices and specifications are subject to change without notice. 

Copyright 1990.

Circle 129 on reader service card.

### NOW YOU HAVE A CHOICE

### Font Freedom™

QMS' universal Font Manager

### Freedom from high prices

Font Freedom is available for only \$49.95 and includes 24 typefaces

QMS' scalable, outline fonts are priced from 1/3 the cost of other outline fonts such as Adobe\*Type 1.

### Freedom from "jaggies"

Font Freedom produces laser sharp printer and screen fonts on-the-fly.

### Freedom of choice...

in printer selection. Font Freedom supports virtually any dot matrix, ink jet or laser printer.

in font format. Font Freedom supports additional font formats such as Adobe Type 1.

### Freedom to grow

Font Freedom provides the first step in PostScript\* printing.

Font Freedom is your passport to PostScript printing. Why settle for just improving your screen font quality and printing on a limited set of printers?

Font Freedom provides scalable screen and printer fonts at any size.

Font Freedom supports QuickDraw printers including the ImageWriter

cluding the ImageWriter\*
and virtually
any dot matrix,
ink jet, and
laser printer

I laser printer.

I laser printer.

I read on the printer of the p

Font Freedom is almost half the cost of the Adobe Type Manager and supports the same licensed typefaces found in ATM™ and PostScript printers. If you already have ATM, your investment is protected. Simply use your Type 1 fonts. You can easily upgrade to UltraScript software for the Macintosh; QMS PostScript compatible interpreter. Use the same typefaces with Font Freedom and UltraScript for the Macintosh.

Introductory coupon offers are included in **Font Freedom** for a limited time only.

For more information call QMS today at: (800) 635–3997 or (408) 986–9400

Made in the U.S.A.

The following are trademarks or registered trademarks of their respective companies: UtraScript, Fort Freedom, CMS and the CMS logs of CMS, Inc.; ATIA, Adobe and PostScript of Adobe Systems, Incorporated; Macintosh of Apple Computer Incorporated, Copyright to 1990 CMS, Inc.

### FONT FREEDOM

Circle 274 on reader service card.

dering. Huffman and Smyrl reduced the size of the file to 2.7MB by rebuilding the pins (metallic leads) on the integrated circuits as united files. Then Huffman and Smyrl broke the image into smaller objects (computer, circuit board, and so forth) in order to simplify the rendering process. Software routines called shaders were used to calculate each object's surface properties and produce specular highlights and wood flooring. Smyrl even wrote a shader that applied the bands of color on the resistors.

Smyrl spent about 75 hours over a three-week period on the project. The wooden floor and ball are borrowed from the Pixar film Luxo Jr. The snowman on the Mac is from Pixar's film KnickKnack. Smyrl worked on a Sun 3150 workstation that has a Pixardesigned graphics-accelerator board connected on the Sun bus. The star field in the background is from Pixar's proprietary star-field generator, a program that makes astronomically correct star backgrounds. You may be able to detect the constellation Orion in the background.

The entire project could have been done on a Mac, but time constraints made it necessary to use the Sun system, which cut the rendering time in half. The motion blur, for example, presented special problems. Smyrl had to use a digital composition technique to give individual motion-blur streaks the appearance of a ball bouncing across the floor.

To maintain the resolution of the data file, Pixar submitted the entire file on magnetic tape to Walker Graphics in San Francisco. Walker produced both match print and CMYK separations from the tape, and performed some color corrections on the highlighting of the ball.

State of the art is possible, but rather painful on the Macs of today. The Mac IIfx release came too late to help, but we look forward to improvements in Mac computer graphics that the IIfx will provide. Our thanks to Ed Catmull. founder and chairman of the board of Pixar; to Bill Woodward, president of Paracomp; and to all the folks at both companies who spent weeks working on the cover. - J.B.

Artists: For our rendering feature on page 136, *Macworld* asked five vendors to put their software to the test by rendering a complex model of a Chinese mask. Here's how Jay Roth, president of Electric Image, and Koji Sonoda of SystemSoft created their images.

Tools: Roth used a Mac IIcx with his company's Electric-Image software, AutoCAD, Studio/8, and Adobe Photoshop. On a distributed network of several Macs, Sonoda used PixelPaint and SystemSoft's modeler and renderer, code-named Shade, which is not yet released in the United States. (continues)



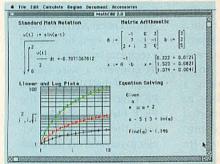
This wire-frame image shows how the data looked before it was rendered.

# After centuries of practice, mankind perfects engineering calculations: MathCAD.

Announcing MathCAD: A Calculating Renaissance For Your Mac.

What the historians will call it, only time will tell.

Perhaps the Century of Speed, or the Era of Ease. But whatever the name, this is the age of MathCAD, the only math package that looks and works the way you think.



MathCAD takes full advantage of the Macintosh® interface, with features that make it simple to enter operators and Greek letters into equations.

MathCAD is the best selling math software in the world because it lets you perform engineering and scientific calculations in a way that's faster, more natural and less error-prone than the way you're doing them now—whether you're using a scratchpad, calculator, spreadsheet, or program that you wrote yourself. It gives you more control and more flexibility than ever before.

MathCAD's live document interface™ lets you enter equations anywhere on the screen, add text, and graph the results. Then print your analysis as a presentation quality document.

And it has over 120 commonly used functions built right in, for

REVOLUTION DARK AGES PREHISTORIC

handling all kinds of equations and formulas, as well as exponentials, differentials, cubic splines, FFTs and matrices.

UNIX version now available.

MathCAD is used by over 90,000 engineers and scientists, including electrical, industrial, and mechanical engineers, physicists, biologists, and economists.

But don't take our word for it.
Just recently MathCAD was
reviewed as being "everything
you have ever dreamed about in
a mathematical toolbox." And
when it was compared to the
competition, it was "MathCAD
by a mile."

And if you work with an IBM\*
PC or compatible, there's a
MathCAD version designed exclusively for you. Or if you use both
Macs and PCs, don't worry:
MathCAD files are completely
compatible between the two.

Look for MathCAD at your local software dealer. Or call MathSoft at 1-800-MATHCAD (in MA, 617-577-1017) for more information or for a free demo disk.

Speed, power and flexibility. Enter the new era of engineering and scientific calculations with MathCAD.

Available for Macintosh and IBM compatibles.

Call for UNIX platform availability.

TM and ® signify manufacturer's trademark or manufacturer's registered trademark respectively.

### MathCAD

MathSoft, Inc. 201 Broadway, Cambridge, MA 02139

U.K.: Adept Scientific 0462-480055; France: ISE CEGOS 1-46092768; Germany: Softline 07802-4036; Japan: CRC 03-665-9762; Finland: Zenex Oy 90-692 7677 ME

### PREVENT MACINTOSH THEFT!



### MacKablit Security System

Heavy duty 10' steel cable secures and locks computer, printer, other equipment, up to 4 components. The unique MacKablit system includes 2 brackets that snap into existing slots on the Macintosh or its peripherals. Additional hardware included for other peripherals that can be secured using existing screws in the equipment. Internal component security: Kablift fasteners secure rear panel of CPU preventing unauthorized removal of internal boards and hard drives. When the cable is passed through the fasteners the screws are concealed. When the cable is passed through all the fasteners the Macintosh system can be secured to the desk .--

List price \$39.95 plus shipping. Please specify Mac, Mac Plus, Mac SE, or Mac II. Quantity pricing also available. Money back if returned in 30 days. Purchase orders accepted. Send for catalog.

Kablit security systems also available for most computers.

Secure-It, Inc. 18 Maple Court • East Longmeadow, MA 01028 Market VEA

1-800-451-7592

Dealer inquiries invited.

Circle 239 on reader service card

### Macintosh TO UNISYS



### MAINFRAME CONNECTIVITY

The Personal Emulation Package (PEP™) allows a Macintosh to emulate the entire family of UNISYS

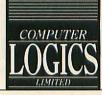
(Sperry) terminals (UVT112X and UTS 20, 30, and 40) for connectivity to Series 1100/2200 and System 80 mainframes. PEP features multi-session support, integrated printing, line monitor to disk, cut & paste, macro-key programming and a fully dynamic configuration. PEP supports both synchronous and asynchronous communication via multiplexers or modems.

Try PEP, the leader in UNISYS connectivity since 1984. To order call 1-800-829-2810



tion); PEP (Computer

Macintosh is a registered trademark of Apple Computer Inc. The following are propriet narks: UNISYS (UNISYS



MICRO-TO-MAINFRAME. WE MAKE SENSE

Computer Logics Limited 75 International Blvd. Rexdale, Ontario, Canada M9W 6L9 (416) 674-1111 Fax: (416) 674-1130 mputer Logics' Worldwide Offices: lustralia = Canada = Germany = Hong K apan = Sweden = United States

How It Was Done: The original image was scanned by Cyberware Laboratories of Monterey, California, with a Rapid 3-D Digitizer. The Cyberware works by throwing a laser grid composed of more than 200,000 data points over an object, so a lot of extraneous data had to be deleted from the model before rendering. Production designer Jon Farhat did some of the cleanup work in AutoCAD before the image was sent to the vendors.

ElectricImage: Roth cleaned up and fleshed out the model in AutoCAD, then added the shelf, wall, and mirror. He imported woodgrain-texture images (in PICT format) from Studio/8 and applied them to the shelf and stand. To create a template on which to paint the mask pattern, Roth rendered the mask in a straight-on view using a 100mm simulated lens to flatten it out. He imported the resulting image into Photoshop, where he painted the pattern on top of the mask. Roth then brought the pattern back into ElectricImage as a texture map, which he applied to the model. After positioning all the objects, he lit the scene with one spotlight and lit the reflection with two spotlights and a



The model as rendered by ElectricImage.



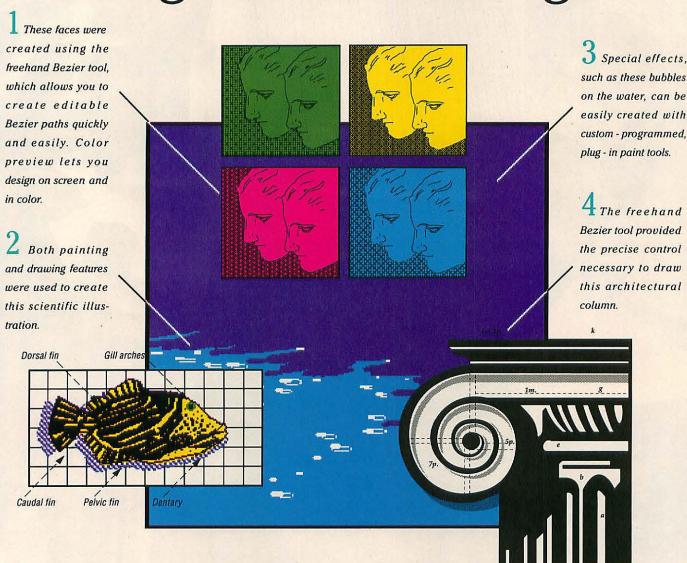
The model as rendered by SystemSoft.

fill light. The entire project took about six hours, much of it devoted to cleaning up the model. The rendering (of six or seven thousand polygons) took about ten minutes on a IIcx.

SystemSoft: Because of the poor quality of the model, Sonoda re-created the mask geometry. First he created a template by using Capture to convert a wire-frame image of the DXF file into a PICT file. He imported the PICT file into Shade and used the program's modeler to reconstruct the mask on top of his template. Sonoda applied randomly generated patterns from Shade to the wall and to the shelf. He scanned in a Chinese character and used Pixel-Paint to fine-tune the image. The mask pattern was also created in PixelPaint, saved as a PICT file, and imported into Shade.

According to Toshiya Tokieda, author of Shade, ray tracing the soft shadow and soft reflection on the shelf and wall required considerable computational time. As a result, the rendering process-distributed over a network of Macs—took about 24 hours. Rendering time could be cut drastically by leaving out the soft shadow and soft reflection features, Tokieda said.—C.E.A.

### SuperPaint 2.0 Setting the Standard. Again.



SuperPaint, the best-selling graphics program for the Macintosh®, has always set the standard against which other software is compared. And we just raised that standard.

In Version 2.0, SuperPaint gives you more graphics power than the costly "professional" drawing programs, yet it's easier to use. Draw spontaneously with the freehand Bezier tool, for example. You don't have to get it perf ≥t the first time—the Bezier path is completely editable, so you can progressively refine your work. Or use AutoTrace™ to instantly convert any bitmapped image to an object-oriented line drawing.

Then, with a mouse click, you can further refine your graphic with the most flexible and sophisticated painting tools available on the Mac, including a slick new airbrush that works just like the real thing. Plug-in paint tools can be custom-programmed and will show up in the tool palette.

We've added nearly all the other features you wanted, too. You can set any document size for printing multiple pages, work in landscape view, or use SuperBits™ to edit bitmaps of any size and resolution — you can even edit a full page at 300 dpi. Plus you can preview your image in color before printing.

More power, more flexibility, and easier to use. That's SuperPaint 2.0 — setting the standard for Macintosh graphics...again.

Suggested retail price: \$199. Upgrade from 1.0 or 1.1: \$50.

System requirements: Macintosh Plus, SE or Macintosh II; System 6.0 or later

Silicon Beach Software, Inc. P.O. Box 261430 San Diego, CA 92126 ◆ (619) 695-6956

AutoTrace, SuperBits and the Silicon Beach Software logo are trademarks of Silicon Beach Software, Inc. Macintosh is a registered trademark of Apple Computer, Inc.



SILICON BEACH





## Now Utilities

### 12 ways to get more from your Macintosh.

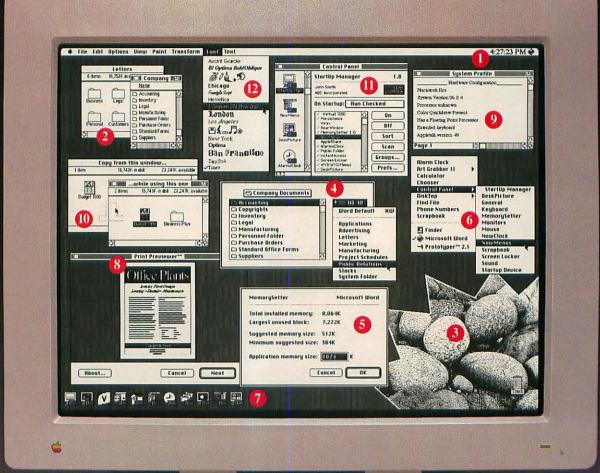
Introducing a powerful new collection of system enhancement utilities:

- 1. AlarmsClockIM Displays the time and/or date in the menu bar and flashes "minimessages" to remind you of important appointments.
- 2. Customizer IM Changes the display of fonts, icons, and windows in the Finder, so you can make it look and work the way you want it to.
- 3. DeskPicture<sup>IM</sup> Replaces the standard Desktop patterns with color or black & white pictures. Supports multiple monitor configurations.

- 4. InstantAccess Saves time and frustration by displaying a menu of frequently used folders in the standard Open and Save dialogs.
- 5. MemorySetter™— Optimizes the allocation of precious RAM by providing on-the-fly adjustment of application memory under MultiFinder.
- NowMenus™— Pops-up the menu bar wherever you click your mouse. Also makes the Apple menu hierarchical.
- 7. Persistence Prevents startup icons from wiping each other out at boot time.

- 8. Print Previewer Saves time and paper by letting you preview on-screen how your documents will look when printed out.
- 9. Profiler Provides an instant analysis of your system and its configuration.
- 10. RearWindows -- Facilitates moving and copying files from inactive windows without activating them.
- 11. StartUp Manager<sup>1M</sup>— Optimizes the performance of your Macintosh by giving you full control over which INITs and cdevs load when you turn on your Macintosh.
- 12. WYSIWYG Menusim-Changes all Font, Style, and Size menus so they display all font names in their own typeface, and all style and size options in the font selected.
- In short, Now Utilities has everything you need to make your Macintosh even more powerful, accessible and fun.
- To order Now Utilities, or for the name of a dealer near you, call us toll-free at 1-800-237-3611.

Now Software





### The End of Literature

MULTIMEDIA IS TELEVISION'S INSIDIOUS OFFSPRING

BY STEVEN LEVY

ultimedia has become a certified

buzzword in computerdom, so much so that the only people whose heads don't drop to the table when that word is intoned are those who have something to sell. At the heart of the instant

boredom concerning this presumably exciting concept is overhype. The promise of multimedia is just a little too far ahead of what Macintoshes (and other PCs, including those of IBM, a company also touting multimedia as the platform of the future) can presently deliver. And besides, in the mantralike repetition of the word, its definition has fuzzed to the point of near-meaninglessness. What is multimedia, anyway? Should we care?

We should care very much. Because despite its vague beginnings, multimedia is just as potent as its myriad promoters say it is. The forces of history almost dictate that it will succeed, and in the not-distant future, multimedia will be so easy to produce that it will be pandemic as a means of communication.

But no one, at least to my knowledge, has anticipated the potentially disastrous effects of multimedia's success. So please say you read it here first: multimedia will hasten the end of literacy. Despite the fact that its promoters are almost universally well intentioned, multimedia's lasting legacy will be the debasement of the

remaining forms of communication in this country that have not already been debased by the perpetually widening gyre of television.

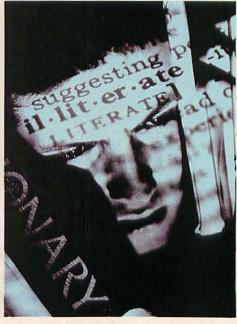
### Tale of the Tube

First of all, let's consider the nature of multimedia. Once you strip it bare of its considerable pretensions, multimedia is essentially one thing: computer applications that aspire to being television. Once you add video-quality images, high-resolution animation, and high-fidelity sound to computer files, you've got your MTV. That's why some folks are calling this Desktop MTV. (Wimps call it Desktop Media—same difference.) Presumably, these multimedia capabilities aid the user in communicating and learning.

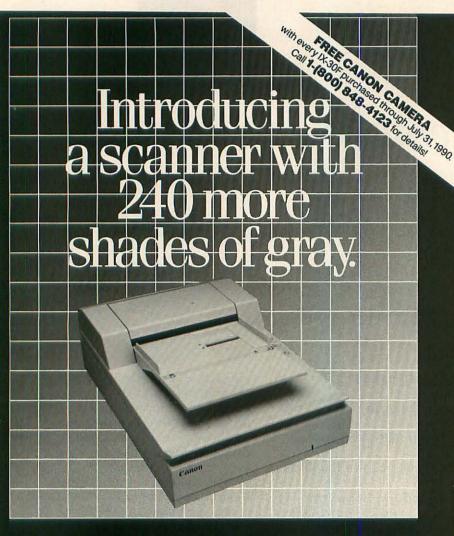
But this is a different form of communication we're talking about, something that, according to *Business Week* magazine, "could change the way people work, learn, and play." How is multimedia different? With colors and pictures and noises and motion, it's oriented not to the mind, but to the senses and the gut—like television. Multimedia disregards the previous

communications paradigm: the person as reporter, blending logic, language, and perhaps illustrative charts in order to inform or compel. The new paradigm sees the user as a television director, most often one who works in the advertising business.

The result is a debasement of content, because the language of television, as convincingly argued by New York University professor Neil Postman in his book *Amusing Ourselves to Death* (Penguin, 1985), is inherently incapable of promoting complex dis*(continues)* 



EFFERY NEWBURY



If you've seen 16 shades, then 64 shades, and maybe even 128 shades of gray and thought that was good, now it's time to get excited! The new Canon IX-30F™ scanner can accurately scan up to 256 different shades of gray to capture the fine subtleties in your photos and other continuous tone images.

And it's so easy to use. With the convenient flat-bed document tray you can scan books, magazines, or photos. Add the optional automatic document feeder and you can effortlessly feed up to 20 letter or legal size documents.

What's more, it doesn't matter whether you are using a Macintosh," IBM\* PC/XT,™AT," or compatible computer. The standard SCSI interface makes it easy to hook up. When you need to expand, you can daisy chain up to 6 additional SCSI peripherals as you require them.

With the software provided, your image can be saved in a variety of file formats compatible with most popular desktop publishing and applications software. You can even modify the scanned image dot by dot, enlarge or reduce it, and create special effects. It's all up to you.

- $30F^{19}$  is a trademark of Canon, Inc. cuitosik's a registered trademark of Apple Computer, Inc.  $W^2$  and  $10^2$  Are registered trademarks and 1% AT $^{19}$  is a trademark of international Business Machines

### Canon IX-30

Working To Improve Your Image."

Call 1.800.848.4123 for more information



Circle 164 on reader service card.

course-style always overwhelms substance. Postman writes, "Television's conversations promote incoherence and triviality . . . the phrase 'serious television' is a contradiction in terms . . . and television speaks in only one persistent voice—the voice of entertainment."

Entertainment, of course, is the bottom line of multimedia. Just listen to its promoters. (Most of them are marketing men like John Sculley.) Invariably they describe these innovative modes of expression as "exciting" or—the most common description of all-"sexy." These adjectives are applied regardless of the content of the concepts or facts to be processed through the multimedia mill. Multimedia deals solely with the style in which information is conveyed. Thoughts are permitted, but they can't look like thoughts-you have to dress them up like show girls. Sooner or later you realize that you communicate more effectively in this medium if you ditch complex thoughts altogether.

The ethos of multimedia was unwittingly expressed recently in a New York Times op-ed piece written by Robert W. Pittman, the television executive who created MTV. He argues, in essence, that the postwar generation of so-called TV babies have grown accustomed to, indeed are entitled to, the short-term, emotiongeared, nonintellectually engaging forms of discourse exemplified by television news and music video clips. Pittman suggested that politicians and educators should use even more of this form of communication. He wasn't speaking of computers, but multimedia fits right into his vision: it stretches the ability of computers to cater to the short attention spans and nonlinear thinking processes of nonliterate TV babies. Thus we face a future where our business reports and school papers aspire to the communicative standards of a Def Leppard clip in MTV heavy rotation.

### Will It Fly?

We see a good example of this TVbaby communication in the justifiably excoriated Apple advertising campaign in which some would-be geniuses in some corporation hatch the idea of a (continues)

# When It Comes To Viruses, There's No Such Thing As Overprotection.



### Introducing Symantec AntiVirus for Macintosh (SAM™), Version 2.0.

The original version of SAM just locked up the 1989 Eddy as "The Best

AntiViral Program" you can buy. Now with added protection and security, new SAM 2.0 is even more effective.





1989 MacUser Eddy Award Winner

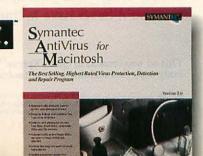
And more essential. Because, when your business is at stake, no amount of protection is too much.

SAM finds and destroys all known viruses and clones. It also protects you from new, unnamed viruses by constantly scanning for suspicious virus-like activity. And only SAM 2.0 protects you with instant virus updates from our exclusive 24-hour Virus Newsline.

To keep viruses from ever becoming a problem, SAM keeps them out. SAM prevents any infected application from launching and spreading a virus, and detects "Trojan Horse" attempts to damage a disk. It checks every floppy or removable you insert, and just touch a hot-key to check files downloaded from networks or by modem.

Total protection. It makes SAM the best-selling, highest rated antiviral program ever created for the Mac. So get new SAM 2.0 today and relax. Because, with SAM 2.0, viruses can come knocking. But they can't get in.

SEE YOUR DEALER, OR CALL FOR MORE INFORMATION: (800) 228-4122 Ext. 651G



## Before you finish this headline, you'll understand the basic advantage of Adobe Type Manager.

We're glad we had a chance to clear things up. Because that's exactly what Adobe Type Manager™ software does best.

It clears up the jagged text on your Macintosh® screen. And, more importantly, out of your Apple ImageWriter® or Hewlett-Packard DeskWriter.™

So whether you're using large type like our headline, or smaller sizes like this, Adobe Type Manager keeps your words looking great every time. Adobe Type Manager

Speaking of time, it doesn't take much to install Adobe Type Manager. Simply drag it into your system folder and you'll never have to think about

it again. But you should think about this: Adobe Type Manager is retail-priced at just \$99. Which means you don't need a high-cost printing system to produce high-quality text.

So call 1-800-344-8335 for the name of your nearest Adobe Authorized Dealer (outside the

> U.S.A. and Canada, call your local distributor).

And do it before you start another headline.



This ad was created in QuarkXpress™ 2.1 with Adobe Type Manager (excluding the first three lines of the headline). Headline text, body copy text and this copy are actual ImageWriter output at 72, 12 and 9 point sizes, respectively.



"helocar," and proceed to convince their bosses to give the project a thumbs-up. What bothers me about the ads is that by using multimedia to illustrate the concept-making a kinetic report chock-full of exploding charts and flying vehicles-the main effort is spent not in doing the hard work of figuring out whether or not the thing will literally fly, but in creating the sexy images that will get their bosses all heated up about the concept. What makes the workers successful is not the idea, but the flashy presentation. Who cares whether the helocar makes financial sense? Look at it fly!

Essentially, the ad campaign views workers, even engineers, as marketers whose job it is to sell ideas to their superiors. That may be a valid interpretation of part of an engineer's job, but placing the heavy artillery of Madison Avenue in the hands of an engineer will likely do much more harm to the process than good. Those tools are effective precisely because of their ability to bypass logic and access emotion. The victory goes to the engineer who can make the best commercial—not the best vehicle.

This process almost guarantees that choices will be made on irrelevant criteria. To quote Neil Postman again, "The commercial disdains exposition, for that takes time and invites argument. It is a very bad commercial indeed that engages the viewer in wondering about the validity of the point being made.... Moreover, commercials have the advantage of vivid visual symbols through which we may easily learn the lessons being taught. Among those lessons are that short and simple messages are preferable to long and complex ones; that drama is to be preferred over exposition; that being sold solutions is better than being confronted with questions about problems."

This is what we want to introduce as the standard means of communicating? Obviously, yes. Catherine Nunes, in charge of multimedia in Apple's publishing, presentation, and audiovisual markets, told me that it was "very likely" that the writing tools of the future would be able to process sound and video images as well as words.

### **Lowering Higher Ed**

If multimedia in business isn't bad enough, consider the potential effects of multimedia in education. Here again, this platform is being touted as a beneficial revolution. No one has bothered to ask, "What are we revolting against?" The answer, of course, is reading and writing. Implicit in all the hype about multimedia is the premise that language alone just doesn't cut it. Those still nourished by this antiquarian activity may argue that the ability to express oneself in words, and to understand the words of others, is essential to the process of thinking. But multimedia laughs at that objection-because multimedia, like its progenitor, television, is designed to entertain, at the cost of thinking.

Let's look at a multimedia project geared to the education market: the ABC-TV products that utilize television news footage of important events, such as presidential elections or the Middle East crisis. Presumably the products' purpose is to amplify the failings of the written word. As Doug Doyle, Apple's manager of multimedia solutions for higher education, puts it, "Traditionally, we thought that information resides in the library-in books. But that's not true anymore." Multimedia is a way to capture that information and, as Doyle says, "add value" to it by including it in the learning process.

That seems to make some sense, but is the gain sufficient to overcome the danger that the images will overwhelm everything else? Take the ABC product dealing with the Middle East. Presumably, by interacting with a multilinked set of video clips loaded with key images and sound bites from the Holy Land, the student gets a deeper understanding of the situation. Actually, since the language of television is the main form of communication here, and the student is encouraged to browse the material by accessing a subject here and a subject there, a lack of context is almost guaranteed. Some of the clips are quite dramatic but lack a full explanation of the circumstances under which they were taped.

In order to get full use of the system, each student needs to spend unhurried time with a Macintosh, a (continues)

### Why Sensible Grammar is first in its class.

Now anything you write, from a business letter to an annual report, can be stronger and clearer. With Sensible Grammar.™A professional proofreading program that uses artificial intelligence to check your punctuation, usage, phraseology and more.

Sensible Grammar scans your work for potential errors and automatically displays the sentences in which they appear. It explains what's wrong and even suggests corrections. Making changes is easy—a simple click of the mouse, and you can do anything from inserting proper punctuation to rewriting entire sentences using the built-in sentence editor. And your formatting information remains unaffected.

Sensible Grammar compares your text against a library of over 4500 phrases to identify informal, vague, racist, sexist and other faulty language. It catches embarrassing typographical errors like misused capitalization and repeated words, and alerts you to mismatched verbs and pronouns, needlessly long sentences and more. It even provides a readability analysis.

Sensible Grammar works with WordPerfect, Microsoft Word, Works, and Write, Apple/Claris MacWrite and MacWrite II, T/Maker WriteNow and text files. And it costs just \$99.95.

So get Sensible Grammar. And be the most effective communicator you can be.

Also available: Bookends,™ the reference management database and bibliography preparation system (\$99.95).



Sensible Software,® Inc.

335 East Big Beaver, Suite 207 Troy, MI 48083 (313) 528-1950

Circle 396 on reader service card.

s you can see, with the Personal LaserPrinter™ II (PLP™ II) from GCC Technologies,™ you get output that is absolutely stunning.

Crisp, clean, professional, and razor-sharp.

If you think PLP II's output is stunning, you'll think the same of its price: an incredibly low \$1,399. It's the lowest-priced laser printer ever for the Macintosh.

And the most impressive. MacUser magazine was impressed: PLP II was this year's Editors' Choice Award Winner.

### **High-Quality Outline Fonts.**

The beauty of PLP II is that it can do the same things many expensive laser printers can do. For only a fraction of the price.

Fonts Plan

Because PLP II includes 22
Bitstream® outline fonts, its output can be shaped, scaled and rotated, as well as enlarged or reduced to any size—all at a full 300 dots per inch (dpi), and at 4 pages per minute.

Which means you have unlimited flexibility in printing all kinds of applications such as text from Microsoft Word, newsletters from Aldus PageMaker, and illustrations and scanned photos from Canvas and SuperPaint.

### Other Beautiful Features.

Another reason the Mac-User editors couldn't take their eyes off PLP II was its user-

friendly front-panel LCD display. Who could blame them? With the simple push of a button, you can set your SCSI ID. Check your percentage of consumables used. Adjust your print density. And more. But what the MacUser editors especially liked was PLP II's "sleep mode," which

automatically silences the printer when not in use.

When it's time to print, PLP II supports a variety of paper weights, including envelopes and transparencies. And with GCC's new desk accessory QuickEnvelope,™ printing envelopes is a snap.

### More Power To You: The New PLP IIS.

For those who want beautiful output with a whole lot of power, there's our new PLP IIS. (The "S" stands for speed.)

With the PLP IIS, you get all the breakthrough technology of the PLP II, only now, you get it at a swift 8 pages per minute.

One megabyte of RAM is standard on every PLP IIS,

which saves you valuable time. While PLP IIS prints the first page of your document, your Macintosh can now process the next page.

With PLP IIS, you get an expanded font library. In addition to the core set of 22 Bitstream outline fonts, you also get our font package called Fonts Plus,™ (a \$239 value) which means you'll have over 40 fonts to choose from.

The new, powerful PLP IIS and the award-winning PLP II. For the Macintosh® user who wants the beauty of great output at a great price. And what could be more beautiful than that?

### BEAUTIFUL OUTPUT. BEAUTIFUL PRICE. THE NEW \$1399 PLP II.



### Dealer or Direct: Your Choice.

GCC has made acquiring your new PLP II and PLP IIS just as easy as using them. If you would like to see a demon-

stration and purchase your printer today, simply visit one of GCC's authorized dealers. For the location of the dealer nearest you, call,

### 800-422-7777.

To order direct from GCC, call us toll-free from 9 AM to 8 PM (EDT) on weekdays, or 10 AM to 4

PM (EDT) on Saturdays. Our trained staff can answer your questions and offer advice

on any of our products. (Be sure to ask for our free catalog.) Orders received by 8PM (EDT) for in-stock items will be shipped the same day via overnight delivery for only \$9.

> What's more, when you buy direct from GCC, we guarantee your satisfaction with a 30-day moneyback guarantee.

### **One-Year Warranty.**

PLP II and PLP IIS both carry a full one-year warranty on parts and labor. We offer repair service here at GCC and at hundreds of GCC

dealers nationwide.



When you call, be sure to ask for our free catalog.

> your clot

cor

tas

By carefully

nat it better

applying makeup

es un in our mother's clothes.

learned that not

### PLP II \$1399. PLP IIS \$1899.

We gladly accept MasterCard, Visa, American Express, or your company's corporate purchase order.



n the outside chance that perhaps you haven't experienced a GCC Technologies'™ UltraDrive,™ let us take you inside.

For it's there that you'll find what makes UltraDrive the most reliable hard disk in the Macintosh® industry.

### **Highest-Quality Components.**

Everything that goes into UltraDrive has been meticulously designed and exhaustingly tested. The result: only the very finest components are used. Like the best hard drive mechanisms from Quantum.

Seagate, and Hitachi.

UltraDrive is an engineering marvel inside and out. It features an easy-to-use push-button SCSI selector switch, a security loop to protect against theft, double-shielded cables, a universal power supply and a low-noise cooling fan. Plus a custom-designed wire harness, which protects sensitive wires from exposure to the power supply.

When you've been making hard disks for the Macintosh longer than anyone else, even longer than Apple, it's not surprising your disks are more reliable.

### An Abundance Of Software.

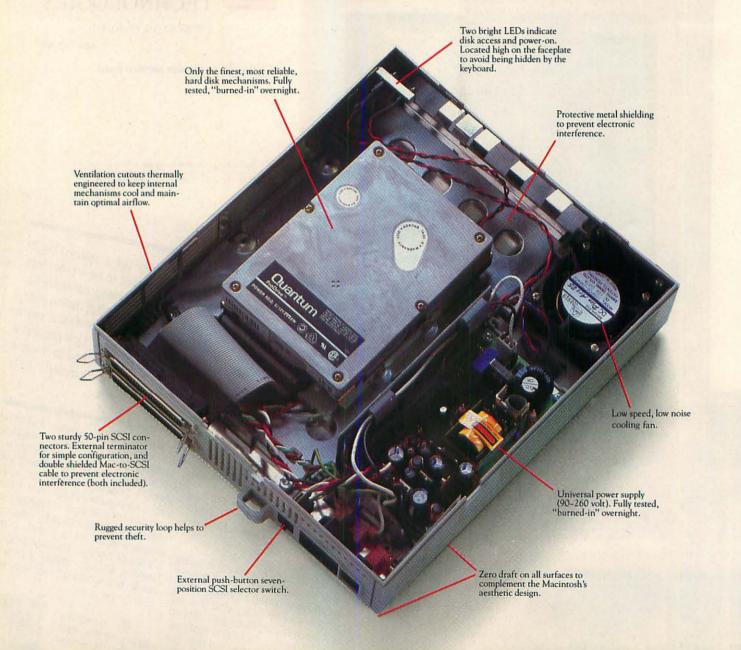
Every UltraDrive comes with an impressive array of value-added software.

Included are SUM™ II from Symantec.™ UltraWare,™ which features GCC's DriveManager,™ QuickSpool™ II, and QuickEnvelope.™ And finally, SelectShare,™ over 3 megabytes of the very best public domain software available.

### **UltraDrive S**

If you like what you've seen so far, let us introduce UltraDrive S. It's the only hard

### IF YOU DON'T OWN AN ULTRADRIVE, YOU SHOULD LOOK INTO IT.





4ARF2

### Save \$23.40



### **BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

### **MACWORLD**

Subscription Department P.O. Box 51666 Boulder, CO 80321-1666 NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



disk nominated as MacUser's Best Storage System of 1989. And UltraDrive S includes all of the same high-quality components, detailed engineering features, and sophis-

ticated software that you'll receive with UltraDrive.

But what sets UltraDrive S apart from the competition is its incredibly fast average access times, its use of on-board disk caching, and a 1:1 interleave on all Macintosh CPUs. Which means that your hard disk will always operate at maximum speed.

So, any way you look at an UltraDrive, you'll find a hard disk to suit your needs.

### Dealer or Direct: Your Choice.

If you would like to see a demonstration and purchase your hard disk today, simply visit one of GCC's authorized dealers. For the location of the dealer nearest you call,

### 800-422-7777.

To order direct from GCC, call us tollfree from 9 AM to 8 PM (EST) on weekdays, or 10 AM to 4 PM (EST) on Saturdays.

Our trained staff can answer your questions and offer advice on any of our products. (Be sure to ask for our free catalog.) Orders received by 8 PM (EST) for in-stock items will be shipped the same day via overnight delivery for only \$9.

What's more, when you buy direct from GCC we guar-

antee your satisfaction with a 30-day money-back guarantee.

### Two-Year Warranty.

All UltraDrive and UltraDrive S hard disks carry a full two-year warranty on parts and labor. We also offer repair service here at GCC and at hundreds of GCC dealers nationwide.

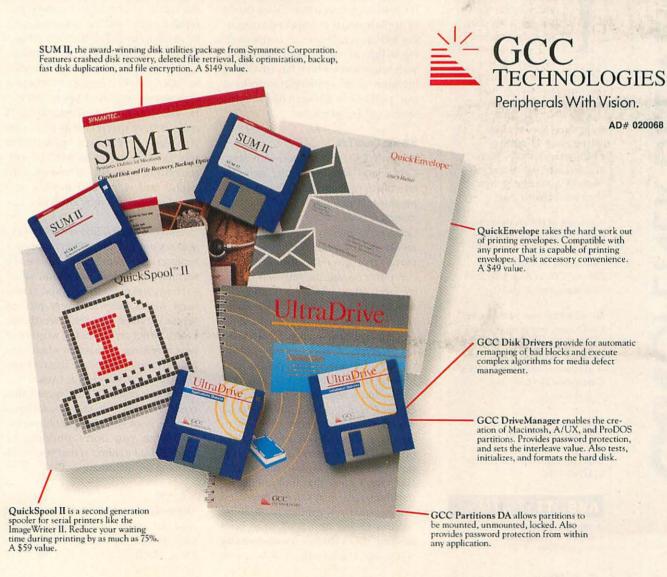


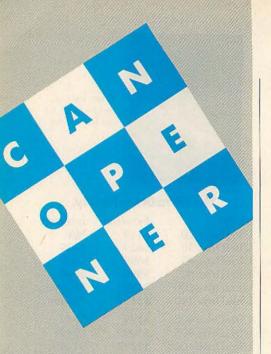
When you call, be sure to ask for our free catalog.

### The UltraDrive Family.

Model	External	Internal
UltraDrive 20	\$549	NA
UltraDrive 30	\$629	\$529
UltraDrive 45	\$699	\$599
UltraDrive 80	\$999	\$899
UltraDrive 200	\$1899	\$1749
UltraDrive 240	\$2199	\$2049
UltraDrive 40S	\$799	\$649
UltraDrive 80S	\$1099	\$949
UltraDrive 100S	\$1299	\$1149
UltraDrive 175S	\$1799	\$1649

We gladly accept MasterCard, Visa, American Express, or your company's corporate purchase order.







We like to think of CanOpener as the information retrieval utility for the Mac. Because it lets you search and retrieve text, pictures and sounds from just about any Macintosh

file; then view, save, print or copy the information you need.

But it seems our users have other ways of describing CanOpener, such as "..useful", "..a lifesaver" or (our current favorite) "..the neatest thing since peanut butter!"

And some of the toughest critics of all, the editors of MacUser magazine, recently awarded CanOpener their prestigious Editors' Choice Award for Best File-Management Utility,

So, no matter how we describe CanOpener, one thing is clear, it's solving our customers' information retrieval problems. And in our opinion that makes CanOpener just one thing ... a success!

CanOpener. \$125. For more information, or to receive a free information package, call 800-552-9157 or 914-747-3116.

### **ABBOTT** SYSTEMS

© 1990 Abbott Systems Inc. CanOpener is a Trademark of Abbott Systems Inc.

Circle 80 on reader service card.

video monitor, and a laser disc player. (Apparently one advantage of multimedia over book learning is that the former generates significantly higher revenues.) Once installed before a machine, students are encouraged to create their own reports on the system. Drawing on the culture of TV babies, these reports are not driven by language or reasoning, but by the accumulation of vivid images. The students are literally asked to perform the function of a television news producer, splicing clips together for maximum impact. And clever students will soon learn, as clever television producers understand all too well, the facts of dealing in a visual medium: one dramatic image, even if misleading, communicates more effectively than an interesting idea without a compelling picture accompanying it. It's history by sound bite. Doug Doyle of Apple insists that responsible teachers will prevent this from happening, but in light of our national experience with television—which has trivialized literature to sitcoms and transformed our politicians into pitchmen-this seems rather optimistic.

### **If Books Could Talk**

Recently I spent a session with Marc Canter and John Scull, the two key executives of MacroMind. They guided me through an impressive tour of their newest version of Director, a program designed to enliven information, multimedia style. Canter was frank in admitting that, given the present state of computer power, the only way Director and other powerful multimedia tools can be implemented is in expensive machines with relatively hard-touse applications. Even so, those who do this type of work anyway—art directors and advertising people and television graphics folks-will currently find a Macintosh to be a costeffective tool. I see no problem at all with lowering the cost of tools to people already involved in this form of show business, and MacroMind is doing honorable work in this regard. Likewise, I think that multimedia capabilities have real value when used in areas such as scientific visualization.

But Canter and Scull were both gushing about the not-too-distant day when our Macintoshes will be more

powerful, and their software will be as simple to use as a Nintendo machine. At that time, they guess reasonably, multimedia will be as accessible to ordinary users as, say, word processing is to people today. That will be the day when multimedia will be utilized in many instances where previously, logical communication sufficed quite nicely-except for the fact that one had to be literate to participate. Marc Canter believes that ultimately, multimedia will make significant inroads in replacing the beleaguered holdouts of communication, those dinosaurs that refuse to yield to pictures and sound ... you know, books.

Earlier, Canter and I had been talking about my current book project. As with the previous ones, I proceed with my research on the assumption that any images I collect in addition to the reams of written and spoken material I gather will be conveyed only by my language. The finished project will be a bound stack of pages consisting of words, accessed a page at a time, in order. Canter is convinced this process will be improved upon. "Steve," he said, bursting with enthusiasm, "I really believe that ten years from now you won't be writing a book in that way. In ten years, books won't be written only in text—they'll be done with sound and video and images, and people will access it by links, not start to finish."

Multimedia fulfilled: a world where sensory input is king. Where writing is replaced by "authoring." Where the techniques of sneaker ads "add value" to charts and spreadsheets, and a thousand words die with every picture. Words we could have used. Words that bind a writer and a reader, words that bear rereading, words that when carefully unraveled detonate fireworks inside the mind and change lives.

Canter couldn't have meant this, could he? Yet, he said it—within a decade, books are going multimedia.

"What you don't understand, Marc," I said to him, "is that you're describing my nightmare."

Steven Levy is a Macworld columnist and the author of The Unicorn's Secret: Murder in the Age of Aquarius (NAL, 1989).

### HOW TO MAKE YOURSELF LOOK BETTER.

ompare WriteImpact™ from GCC Technologies with the Apple® ImageWriter,® and you realize there simply is no comparison.

The difference isn't hard to pin down.
The ImageWriter is a 9-pin printer.
WriteImpact is a 24-pin.

you can choose push or pull tractor-feed.
For letters, you can print on single sheets
and envelopes without removing your tractor
feed paper. There's also automatic paper
loading and parking, plus a paper tear
feature with automatic repositioning.

professional, and if you call, we can give you the name of the one nearest you.

### Risk-Free, Hassle-Free.

At GCC Technologies, we guarantee satisfaction. Order your WriteImpact directly

### Yourself

The \$595 ImageWriter.

### Yourself

The \$699 WriteImpact.

Which means, with WriteImpact, you get 24-pin letter-quality. With ImageWriter, you get 9-pin whatever.

In fact, with WriteImpact, you get incredibly high resolution — 360 dots per inch (dpi) horizontal x 180 dpi vertical.

### Letter Quality, Plus Outline Fonts.

WriteImpact comes with something else the ImageWriter doesn't: 22 high-quality outline fonts. WriteImpact's outline fonts can be shaped, reduced or enlarged, rotated to any angle, and printed in a variety of point sizes — from 2 to 500 points

(1/32" small to 7" high).

WriteImpact is just as versatile with paper. With multi-part invoices,



Ordering WriteImpact is pretty automatic, too. Just call the number below or visit your nearest GCC dealer.

### Direct or Dealer: The Choice Is Yours.

To order WriteImpact direct, just call 800-422-7777 from 9 AM to 9 PM (EST) on weekdays, or 10 AM to 4 PM (EST) on Saturdays. Our trained staff will answer all your questions and offer advice on any of our products. (Be sure to ask for our free catalog.) Orders received by 8 PM (EST) for instock items will be shipped the same day via overnight delivery for only \$9.

Or, you can order WriteImpact from one of our dealers. Every GCC dealer is a Macintosh from us, and if after 30 days you're not completely satisfied, return it to us and we'll cheerfully refund your money.

Remember, too, that WriteImpact carries a one-year warranty on both parts and labor. And we offer repair service here at GCC and at hundreds of GCC dealers.

### WriteImpact Printer \$699.

For the name of the authorized GCC Technologies dealer nearest you, or

### To Order, Call 800-422-7777.

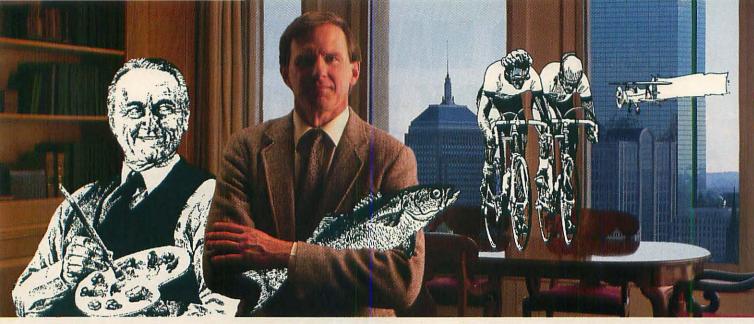
We gladly accept MasterCard, Visa, American Express, or your company's corporate purchase order.



Peripherals With Vision.

AD# 020066

In Canada, (800) 263-1405 © 1989 GCC Technologies, Inc. GCC dealers may differ in regard to policies, procedures and prices.



### Of course the presentation went well. I had professional help.

These days, it's not enough to have great ideas. You have to get those ideas across. Cut through the clutter. And make them stick.

And that's why there's Metro ImageBase. The only electronic clip art that lets you confidently add quality pictures where words alone won't do. In everything from presentations and reports, to newsletters and correspondence.

First, Metro ImageBase looks better than other clip art. Drawn with more detail, with more style and artistic flair.

You'll also find we have more of the art you need. Better organized, in packages like ReportMaker, NewsletterMaker, Borders & Boxes, Travel, and more. Each with 100 images,

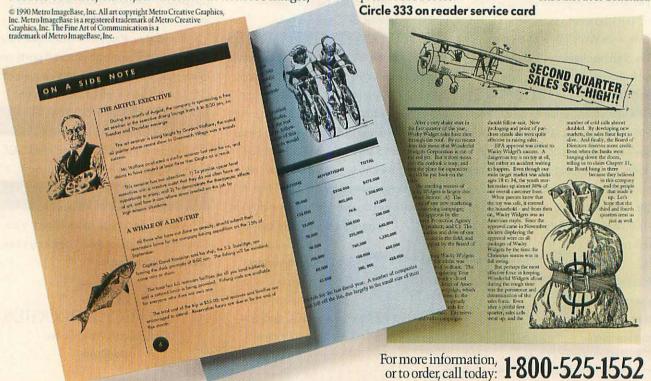
compatible with just about every DTP, presentation graphics, and word processing package that handles graphics in the first place. On both the Mac® and PC.

And with full 300 dpi resolution, Metro ImageBase stands up to more scaling, both up and down, so it fits where you need it, and always looks great.

Ask for Metro ImageBase at your software dealer. And make your next document the very picture of success.

IMAGE BASE
The Fine Art of Communication

METRO





### Information, Please

HELPFUL TOOLS AND RESOURCES FOR MAC USERS

BY DEBORAH BRANSCUM

here's a world of information about

the Macintosh, but it's not always easy to unearth. Here's a

brief and opinionated survey of products and services that

can simplify your search.

Indexes Our annual index (usually in the January issue) is fine for many readers, but you may prefer to have an index on a disk. No problem—two small companies offer floppy-disk guides to *Macworld* and two other Mac magazines.

Niles & Associates of Berkeley, California, began indexing *Macworld*, *MacUser*, and *MacWeek* in February 1989. The company also publishes EndNote, a reference database and bibliography maker. For \$120, subscribers to MacInfo receive the initial disk (covering February 1989 to date), 12 monthly updates, and a run-time version of EndNote. I like MacInfo a lot, despite its shortcomings (see "Indexing Plus"). (Developers, students and educators, and user groups can purchase the product for \$99.) Niles can be reached at 415/655-6666.

MacKay Associates of Lincoln, Nebraska, began indexing Macintosh publications in 1986. The Journal Index comes as a bare-bones, laconic HyperCard stack (see "Bare Basics") and a text file that can be loaded into a database template; check with the company to see if your particular daMicro Guide heele an ho detail or 800 Book hard book says is 360 M. Beca

tabase is supported by a template. The Journal Index for 1990 covers the three largest Macintosh magazines. A six-issue (12-month) subscription costs \$65. The 1989 edition includes additional publications and is priced at \$35. The 1984–1988 edition is also \$35. Contact the company at 402/486-3550 or 800/829-6753.

Databases Through CompuServe

you can access the Dialog service, which offers at least five databases of interest to computer users. (Dialog may also be available through your public library.) The databases include the Microcomputer Index and the Microcomputer Software & Hardware Guide and are intended for the well-heeled: these babies will cost you \$60 an hour and more to access. For more details, talk to Dialog at 415/858-3810 or 800/334-2564.

**Books** For one-stop shopping, it's hard to beat MacBooks, a mail-order bookstore in Palo Alto, California, that says it keeps track of the more than 360 Macintosh books currently in print.

Because customers can't browse, Mac-Books publishes a \$2 HyperCard

> catalog with a complete list of the books and brief reviews. Regular new-book bulletins also keep clients informed. "We do try to take a stand on books, since we are mail order and people can't browse," says president David Angell.

You can access the book bulletins and catalog from the MacBooks forum on Connect, or call the company directly at 415/494-2154.

MARK ULRICH

Angell warns that no one book can answer all your questions, but he's happy to suggest some recent titles. For beginners he recommends *The Big Mac Book* (\$27.95, Que, 1989), "because it's hands on and geared toward *(continues)* 

### You could have turned a \$50,499 investment into \$2,715,391 in 5 1/4 years with our Index Program.

Type	Purchase Date		Purch	Conn /Buy	Cost	Sell Date	Sell Price	Coun /Sell	Today's Value	P/L
	12/28/84		\$3.00	\$209.25	\$30,209.25	01/09/85	\$4.25	\$226.25	\$42,273.75	\$12,064.50
	01/29/85		\$4.38	\$230.00	\$43,980.00	02/11/85	\$5.63	\$267.50	\$55,982.50	\$12,002.50
Puts	03/12/85		\$2.88	\$209.25	\$28,959.25	03/19/85	\$4.00	\$218.75	\$39,781.25	\$10,822.00
	04/26/85		\$3.50	\$209.25	\$35,209.25	05/20/85	\$6.75	\$301.25	\$67,198.75	\$31,989.50
	06/26/85		\$2.38	\$209.25	\$23,959.25	07/01/85	\$3.13	\$209.25	\$31,040.75	\$7,081.50
	07/18/85		\$5.00	\$248.75	\$50,248.75	07/23/85	\$3.75	\$211.25	\$37,288.75	(\$12,960.00)
Puts	08/13/85		\$3.25	\$209.25	\$32,709.25	08/26/85	\$2.75	\$209.26	\$27,290.75	(\$5,418,50)
Puts			\$2.25	\$209.25	\$22,709.25	09/26/85	\$2.50	\$290	\$24,790 75	\$2,081.50
	11/05/85		\$4.88	\$245.00	\$48,995.00	12/18/65		- CS0	\$195,562.50	\$146,567.50
	01/27/86		\$3.25	\$209.25	\$32,709.25	03/04/86		\$ 25.00	\$108,325.00	\$75,615.75
	03/12/86		\$4.75	\$241.25	\$47,741.25	04/29/86	A	387.50	\$95,862.50	\$48,121.25
	05/21/86		\$4.50	\$233.75	\$45,233.75	06/09/86	A STOR	\$391.25	\$97,108 75	\$51,875.00
	08/06/86		\$4.13	\$222.50	\$41,472.50	09/05/96	100	\$481 65	\$127,018.75	\$85,546.25
	09/17/86		\$4.50	\$233.75	\$45,233.75	09/05/96 11/13 98	98.88	\$205.00	\$68,445 00	\$23,211.25
	11/25/86		\$4.13	\$222.50	\$41,472,804	117	\$4.88		\$48,505.00	\$7,032.50
Puts			\$2.38	\$209.25	\$23,959 25	0.00 /87	\$1.00-	3307.25	\$9,790.75	(\$14,168.50)
	01/08/87		\$6.75	\$301.25	\$67,801 25	Ø3/03/87	\$29.	1987.50	\$295,262.50	\$227,461.25
	03/05/87		\$3.50	\$209.25	\$35-209.20	03/12/07	1	\$209.25	\$29,165.75	(\$6,043.50)
	03/20/87		\$4.75	\$241.25	44 21 25	04/01/0	1	\$346.28	\$82,153.75	\$34,412.50
	05/06/87		\$3.75	\$211.25	27 11 25	05409 97	42 25	\$209.20	\$22,290.75	(\$15,420.50)
Puts	05/19/87		\$4.88	1244 00	139.995.00	- X	\$7 50 A	Ga23.75	\$74,676.25	\$25,681,25
	06/17/87		\$4.25	1000-0	CO 200 201	0 (15.787	50 00	13 6.25	\$82,153.75	\$39,427.50
	07/31/87		\$3.13	DIN T	\$31 459	8/06/87	s don't	1248.75	\$49,751.25	\$18,292.00
	08/10/87		\$5.88	122000	459 025 80	08/26/87	1	\$509.45	\$136,390.55	\$77,365.55
Puts	09/09/87		-4-	\$230.00	\$43 00 00	09/10/87	12 15	\$209	\$36,040.75	(\$7,939.25)
Puts	10/08/87		4 4	\$303.13	77,803.13	10420087	\$97.00	\$2.467.50 A	\$967,242.50	\$889,439.37
Puts	11/10/87		155	\$248.00	0 248 75	1000	\$5 69	130 3	\$56,605,63	\$6,356.88
	11/13/87		8.50	4240	\$35 200	1 197	\$2.36	\$20 25	\$23,540.75	(\$11,663.00)
	12/15/87		\$3.13		120	127 4/87	200	53.75	\$84,646.25	\$53,187.00
	02/11/88		\$2.25	\$2 25		03/17/80	Townson I	\$327.50	\$75,922.50	\$53,213.25
	03/25/88		\$3.38	\$209.254	08.999.25	04/05/48	100 B	\$267.50	\$55,982.50	\$22,823.25
	05/16/88		\$4.63	\$237.50	1 5 487 50	0546/88	55.25	\$256.25	\$52,243.75	\$5,756.25
	05/26/88		\$4.25	\$226.25	442 726 25	06/38/98	\$15.00	\$548.75	\$149,451.25	\$106,725.00
	08/01/88		\$4.00	\$218.75	\$40,218.7	1000	\$2.63	\$209.25	\$26,040.75	(\$14,178.00)
Puts	08/10/88		\$4.00	\$218.75	\$40.24 27	9/24/88	\$7.38	\$320.00	\$73,430.00	\$33,211.25
Puts	10/05/88		\$3.25	\$209.25	\$73,709 15	10/10/88	\$2.00	\$209.25	\$19,790.75	(\$12,918.50)
	10/18/88		\$5.50	\$263.75		10/21/88	\$9.50	\$383.75	\$94,616.25	\$39,352.50
	01/09/89		\$7.13	\$312.50	\$71 2 50	02/09/89		\$638.75	\$179,361,25	\$187,798.75
	02/17/89		\$6.25	\$286.25	\$62,786.25	02/22/89	\$5.25	\$256.25	\$52,243.75	(\$10,542.50)
	02/23/89		\$3.75	\$211.25	\$37,711.25	03/02/89	\$4.88	\$245.00	\$48,505.00	\$10,793.75
	03/06/89		\$5.63	\$267.50	\$56,517.50	03/17/89	\$8.38	\$350.00	\$83,400.00	\$26,882.50
	03/29/89		\$6.38	\$290.00	\$64,040.00	05/02/89		\$421.25	\$107,078.75	\$43,038.75
Puts	05/10/89		\$2.63	\$209.25	\$26,459.25		\$1.75	\$209.25	\$17,290.75	(\$9,168.50)
	07/06/89		\$5.75	\$271.25	\$57,771.25	08/14/89		\$673.25	\$249,326,75	\$191,555.50
	08/24/89		\$3.63	\$209.25	\$36,459.25	08/25/89		\$342.50	\$80,907.50	\$44,448.25
	09/28/89		\$4.13	\$222.50	\$41,472.50	10/09/89		\$436.25	\$112,063.75	\$70,591.25
	12/29/89		\$4.13	\$222.50	\$41,472.50	01/03/90		\$346.25	\$82,153.75	\$48,681.25
Puts	01/09/90		\$5.50	\$263.75	\$55,263.75	01/15/90		\$488.75	\$129,511.25	\$74,247.50
Puts	01/16/90		\$8.75	\$361.25	\$87,861.25	01/24/90		\$545.00	\$148,205.00	\$60,343.75
Puts	02/21/90		\$4.25	\$226.25	\$42,726.25	02/26/90		\$186.88	\$29,188.13	(\$13,538.13)
	03/16/90		\$6.63	\$297.50	\$66,547.50	03/20/90		\$398.75	\$99,601.25	\$33,053.75
Carre	93710790	.00	40.00	+427.50	400/047100	33720730	4.0.00	40.00.70	422,301.20	\$2,715,391.92
										+=,,usi.sa

76.47% Accurate: Above is a chart of OEX trades from December 28, 1984 to March 20, 1990. This chart contains trades based on the signals generated by the Right Time-Index Program. By following the signals generated by the program, the rules in the manual and starting with just a small amount of capital (\$50,000), your profits would have been over \$2,700,000,00.

The Right Time ™ computerized trading system was developed by an expert portfolio manager for his own personal use. Over the last nine years of in-market use the software has been perfected and made easy to use. Now it's available for any smart trader who wants to make quick profits from quick decisions.

Not only is The Right Time ™ the best decision support system ever devised for traders, it's the only software that analyzes volume/ price, support/demand, and global market trends - all at the same time.

### Amazingly Precise.

The Right Time ™ programs run on IBM (and compatible), Apple II and Macintosh per-sonal computers. The software is easy to use, amazingly precise, and very, very clear in its

You can retrieve and update signals for your stocks, commodities, indices or funds from Dow Jones, Warner, Signal, DBC, Bonneville or the Radio Exchange in less than five minutes per day. What's more, you can play "What If" games and have results in less than two seconds.

### Results: Winning Trades.

There are seven Right Time TM programs available to help you make the right decisions at the right time.

Stock Program: "The program is amazing. Profitable trades have developed out of no-where!" M.C., brokerage firm vice president. Index Program: "Computer whiz finds program for success. This program really works."

A.G. financial columnist.

Futures Program: "Very profitable with four out of five winners. Paid for itself the first trade." B.L., advisor.

Mutual Funds Program: "Accurately picked my last seven profitable trades. I couldn't trade without it." L.S., investor.

Stock Program/Long Term: what I've been waiting for from T.B.S.P.. Perfect for our more conservative clients." G.M., stockbroker.

Day Trading Program/Index or Futures: "The Day Trading Programs are sensational" P.S., individual investor.

### For More Information.

Call (714) 721-8603 or write today for our free sixteen page brochure. Each program costs \$499, any two - \$899, any three - \$1299, any four - \$1599 or all five - \$1899. We also have demos for just \$59 (each) - includes manual. Day Trading Programs priced at \$999 each or both for \$1799.

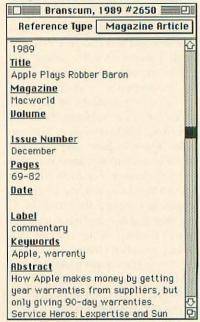
100% Rebate Program: Software is virtually free when trading through Jack Carl/312 Futures.



© T.B.S.P. Inc. 1990

Hours: M-F 9:00 am - 5:00 pm Pacific Time All programs not available on all computers. new users." One meaty, more-technical read is Inside the Apple Macintosh (\$24.95, Brady, 1989) by Macworld contributing editor Jim Heid and Peter Norton. Encyclopedia Macintosh (\$24.95, Sybex, 1990) is a general resource book "geared toward the software end of the Mac world" that packs a lot of information in its pages. It includes ten tips and quick references for many popular programs and is also available as a \$50 HyperCard stack from Heizer Software (415/943-7667 or 800/888-7667).

Organizations There are a slew of useful organizations for Macintosh users, but I only have room to mention three of them. APDA offers technical tomes and other products to the programmers and would-be programmers among us. The Berkeley Macintosh User Group and Boston Computer Society are excellent general sources of information. For example, twice a year BMUG produces herniainducing "newsletters" of 300-plus pages. And the group pays Macintosh experts to staff a telephone help line for members. BCS publishes regular (continues)



### Indexing Plus

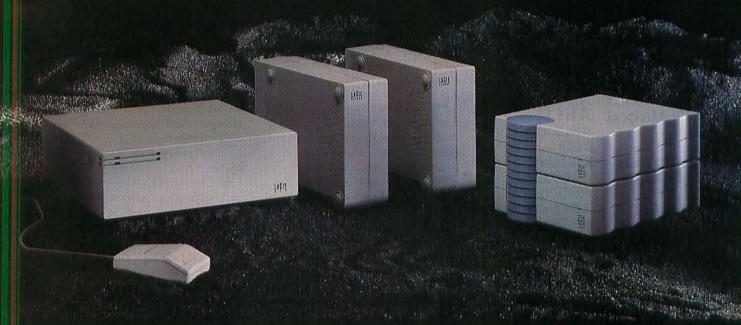
You must use MacInfo with EndNote, but in return you get information about the author, pages it appears on, title, and type of article, plus room for your own notes. The occasional misspelled keyword, such as warranty, can make it tough to find the article you want.

### IT'S ALL HERE IN BLACK AND WHITE

Up to now Macintosh users had only one choice for hard disk solutions. One choice for warranty. One choice for service. One choice for hard drive mechanisms. And one choice for cases.

La Cie expands your choice. La Cie offers you national onsite service up to one year, warranty programs from one to five years, toll free technical support, optional carrying case, your absolute choice of Connor, Hewlett-Packard or Quantum drive mechanisms, and three different case designs to choose from — ZFP, Cirrus and Tsunami. Of course, Silverlining is included too.

Since 1985 La Cie has offered you more. It's your choice.



Drive Mfg.	Size MB	Seek Time (ms)	ZFP Price	Cirrus Price	Tsunami Price	Warranty Year(s)
William !	20	25	399	499	599	1
	40	25	479	529	699	1
Conner	80	25	699	759	999	11
	100	25	799	859	1099	SET 15.1
	200	15	1199	1259	1599	
	40	15	529	579	799	5
	50	15	599	659	899	5
	80	15	799	859	1099	5
Quantum	105	15	899	959	1199	5
	120	15	999	1059	1299	5
	170	15	1199	1259	1599	5
	210	15	1399	1459	1799	5
HP	660	15	3099		100	5

"La Cie gives hard disks a Silverlining," MacWeek 1990

Call to order (800) 999-0143. International or U.S. call (503) 684-0143. Fax: (503) 624-0919



Circle 199 on reader service card



buying guides that list Journal Index™ - '89:Journal Index 1989:Journal Index™ member discounts MacWorld and special packages 12 - 89and also offers a fine Page 69 Info monthly newsletter, BCS Update. Keywords You can reach Apple Worrantu APDA at 800/282-Undate... 2732, BMUG at 415/ Selected Printing Discussion of problems with Apple warranty 549-2684, and BCS at 617/367-8080. Find

Q

4

m

Macworld Online

Devoted readers now have an opportunity to hobnob with

Macworld editors and access selected articles through the Macworld Online service provided in conjunction with America Online. For free software and details, call Quantum Computer Services at 703/448-8700 or 800/227-6364.

**Under the Hood** Grease monkeys in the audience will appreciate a new diagnosis-and-repair HyperCard stack from MicroMat Computer Systems of Novato, California. The first module, priced at \$100, covers the Mac SE and was released in February.

Founder Jeff Baudin has "been tearing things apart since I could crawl" and has several years of component-level repairs under his belt. In collaboration with another repair specialist, Mike McCord of MicroDoc. Baudin created a stack with hundreds of component illustrations and schematics. These are linked with expertbased diagnostics to help guide you through troubleshooting sessions (see "Display Disabilities"). MicroMat is still in the repair business and offers replacement parts to do-it-yourselfers. The company can be reached at 415/ 898-6227 and 800/829-6227.

Of course, if your only Mac gets sick, you may not be able to check a stack for information. Don't worry, *Macintosh Repair & Upgrade Secrets* (Hayden Books, 1990) covers the Mac 128K through the SE. Written by usergroup stalwart Larry Piña (a developer and tech writer), the book seems clear and helpful.

Did I leave anything out? You bet. I haven't discussed many swell sources of fact and fancy. Mapping the entire Macintosh universe would be impossible; consider this a nudge toward your own Mount Everest.

### Bare Basics

The Journal Index is too basic for me—no authors or titles hog space here. But it does offer flexibility for people who want to use its text files with a database program, such as FileMaker.

### **Cranky about Crate**

Last October I received a letter from Steven Payne of Washington, D.C., who was in the midst of an odyssey that would tax the patience of a saint. So perhaps it's appropriate that he's a Roman Catholic priest and editor of *Spiritual Life* magazine. Father Payne bought a 60MB external Crate Technology hard disk drive from a dealer in September 1988 to use with his Mac SE for desktop publishing.

Problems with the disk prompted Father Payne to call the dealer and Crate for advice. When telephone troubleshooting didn't work, he returned the disk drive on August 15, 1989, to the dealer at Crate's suggestion. He, in turn, sent it to Hamilton Avnet, the large disk drive distributor from which the dealer had purchased the drive originally. Hamilton Avnet sent the drive to Seagate for actual repair. And there the drive sat. And sat. And sat.

Father Payne called his dealer. He called the manufacturer, Crate Technology. He called Hamilton Avnet. He called me. Eventually Hamilton Avnet returned the drive—broken. Another round ensued, and in late February Father Payne wrote to tell me that a working replacement unit had finally arrived. A mere six months later, a new drive replaced the old.

But a mystery remains. Why didn't Crate help Father Payne get his drive repaired? The drive came with two warranty statements. One statement (continues) For MACWORLD Subscribers Only



YES!

Please bill me.

Please send me a year (12 issues) of MACWORLD for only \$24. That's almost 50% off the annual cover price of \$47.40.

NAME	
COMPANY	
ADDRESS	
CITY / STATE / ZIP	

Allow 4 to 6 weeks for delivery. Basic subscription price is \$30 for 12 issues. The annual cover price is \$3.95 per issue, \$47.40 annually. Add \$18.00 per year for Canadian and Mexican subscriptions.

Payment enclosed.

### Subscribe today and SAVE \$23.40!



### **BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Haldlandladdadladladladladladladla

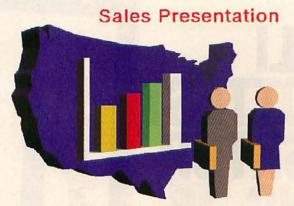
### **MACWORLD**

Subscription Department P.O. Box 51666 Boulder, CO 80321-1666 NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

Detach and mail today!

Don't let this card get away...

### **CAN YOUR GRAPHICS PROGRAM DO THIS?**



**Presentation Graphics** 



**Design Presentation** 



**Graphic Arts** 



Illustration

### The Essential Graphics Tool

With Swivel 3D you can quickly add a powerful new dimension to your graphic presentations. It draws in three dimensions and saves in the PICT, Paint and even in Adobe Illustrator's EPS file format. So Swivel 3D works with all your other applications! Use Swivel 3D to design 3D fonts and logos, create graphic arts and presentations, visualize and illustrate products, and a whole lot more. Swivel 3D is powerful, yet amazingly easy to use.

### It's Easy as 1-2-3D

Swivel 3D imports 2D PICT and Paint file formats allowing you to quickly turn them into dynamic 3D graphics. It also comes with a library of images to get you started right away. Swivel 3D goes beyond traditional graphics packages by letting you quickly visualize ideas, develop and present designs, and freely view your designs in three dimensions.

### **Fast Modifications**

Modifications are fast and easy. Quickly change colors, adjusted the lighting, cast a new shadow, alter the perspective, and you have another powerful graphic that would have taken hours to do in other applications. Its versatility and flexibility will give you the competitive edge.

### See your Dealer Today

Or call Paracomp for more information.

Demo disks available for \$10. All registered users will receive free tech support to help you get the job done.



### Paracomp, Inc.

123 Townsend Street, Suite 310 San Francisco, CA 94107

(415) 543-3848

**Requirements:** Two versions of Swivel 3D are provided. One for those with 1-2 Mbytes of memory. One for 4Mb+ user.

Swivel 3D is a trademark of Young Harvill/VPL Research, Inc. Other brands and product names are trademarks of their respective holders. © 1990 Paracomp, Inc. All rights reserved.

### BERNOULLI DRIVES THE HOTTEST ISSUES IN DESKTOP PUBLISHING.

"Since a color TIFF image can eat seven or eight megabytes, the need for alternative storage devices is growing rapidly in desktop publishing."

For Scott Campbell, the art director of *Aldus Magazine*, desktop publishing is



serious business. Because when you produce a magazine for the world leader in desktop publishing, you

have to do it right. So Campbell relies on the proven expert in removable storage. Bernoulli.®

"Aldus Magazine is no ordinary publication," says Campbell. "Its design and production are a lab for over 200,000

Aldus® customers. We use our software to redesign each issue, and with the

amount of data we handle,

Bernoulli really simplifies the process."

Bernoulli is a complete primary storage solution for desktop publishing. Its removable 44MB disks provide endless

storage capacity, without the worry of filling up a hard disk.

And Bernoulli works the way you work, giving you total flexibility in data storage and transfer. It

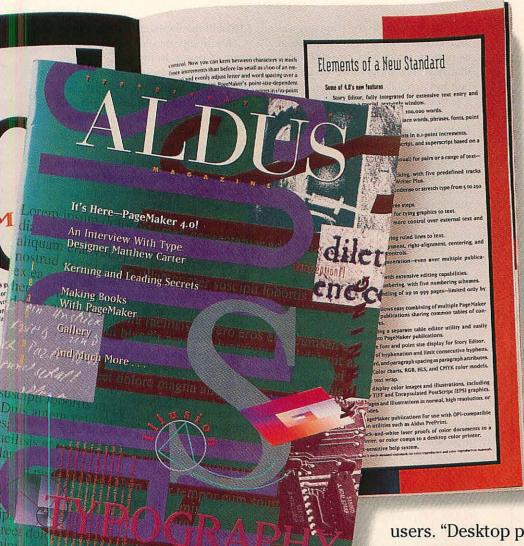
allows you to keep both your files and application on one 44MB disk. So transferring large projects to service

bureaus is as simple as sending the disk over, eliminating software compatibility problems and saving the time of using a modem. And since Bernoulli disks can withstand 1000Gs of shock, they're

rugged enough to mail anywhere.

"Sending huge amounts of data to service bureaus demands a portable, high-density medium,"





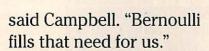


deliver hard disk performance without the risks.

According to Campbell, Bernoulli solves another growing concern of desktop publishing

users. "Desktop publishers are entering a new generation, pushing the software to create larger, more complex documents than ever before. Bernoulli gives those users the convenience, transportability, and storage capacity they require."

Become a part of the industry's next generation. Call 1-800-777-4066 for free Bernoulli literature. Because Bernoulli is quickly becoming another hot issue in desktop publishing.



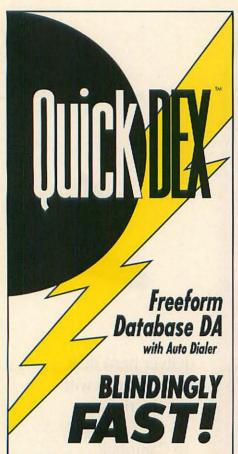
Bernoulli is also compatible between PC and Macintosh® environments. And its crashless design and 22msec effective access time

Scott Campbell, Art Director, Aldus Magazine, Aldus Corporation





Circle 260 on reader service card



Instantly find a name, phone number, or text item in 1000+ records. Use QuickDEX for names and addresses, notes, product info, part numbers, employee info, client lists, call backs, phone conversation notes, or all of the above. Quickly find the information you want by typing any fragment of the record. Automatically dial phone numbers with Hayes-compatible modems or some Mac speakers. Print mailing labels from QuickDEX files.

Recognized as
One of the Top Three DAs of 1989
by Macworld reader survey.

DA with the Highest Satisfaction Rating — Macworld Sept. 88

1988 CES Showcase Award for Productivity



Circle 138 on reader service card.

said "AppleCrate [as the company was then known] will repair or replace, at its option, any AppleCrate disk drive that becomes inoperative or fails to perform to published specifications for a period of two years from the date first shipped." The other statement said "Warranty of any disk drive installed in the AppleCrate is specified by the warranty of the manufacturer of the specific drive used." Crate president Chris Lemoine argued that it was the dealer's responsibility to get the drive fixed, not Crate's. The warranty's words, apparently, were meaningless.

I talked to Lemoine recently to get his side of the story. I wanted to understand Crate's perspective, particularly in light of other complaints I've received about poor service from Crate.

Lemoine said Crate sells housing and software to Hamilton Avnet and not drive mechanisms, which caused the misunderstanding. Crate now offers a two-year limited warranty on the case and a one-year warranty on the drive when Crate adds the drive mechanism.

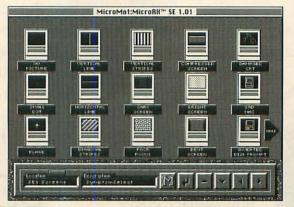
Lemoine blamed the problem on the dealer, who reportedly had given up his small company and moved by the time Father Payne's drive needed repair. "Typically, if a person buys a product from a retailer, the retailer has inventory that can buffer a person from the process. In this particular case, the consumer had no buffer," said Lemoine. "The retailer made his \$300 and then walked away from it."

A warranty should be more than a piece of paper. In my opinion, Crate should have stepped in and repaired or replaced Father Payne's drive because that's what the first warranty said Crate would do. Father Payne shouldn't be held responsible for Crate's inconsistent warranty policies. But I have some sympathy for the situation of companies like Crate. "How does a manufacturer protect himself from products sold by incompetent people?" asked Lemoine. One answer is authorized dealers, and Crate is looking at that possibility.

Father Payne did finally get a new drive, but only after many months and many letters to three different companies. Did Crate learn anything from its customer? Probably not. "Maybe Crate should have solved the problem, but I thought giving the man [Father Payne] a drive would only condone his behavior," said Lemoine.

What about Father Payne? "I guess I've learned not to deal with Crate and Hamilton Avnet in the future, at least not unless I get everything spelled out in writing from the start," he writes. "They seem to view consumers as if we were adversaries out to bilk them. I'll also avoid any similar arrangements where I'm dealing with a manufacturer through both a dealer and distributor. I often felt like the victim of an elaborate shell game, trying to guess which party was going to admit responsibility for the warranty. But finally, I've

learned that persistence pays off.... Almost every positive development over these past six months was at my prodding."



### Display Disabilities

MicroRX is a HyperCard-based expert system for Macintosh SE repairs. In the section on displays, clicking on the icon that represents your Mac's problem (above) brings up a description of the ailment and suggested action.

### **Jasmine Update**

Jasmine is accepting and shipping new product orders (with Fujitsu mechanisms), and using half the income for back orders and repairs, according to Jasmine president

William Bayer. When Jasmine filed for Chapter 11 in mid-March, there were 1500 to 1600 product back orders. Bayer said the company's goal is to (continues)

## Tomorrow's Upgrade For Your Mac Is Only

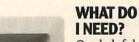
A MacWarehouse Memory Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable, overnight service will have your Kit in your hands tomorrow!

### MORE BRAIN POWER FOR YOUR MAC

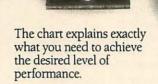
Never again will you have to quit your word processor just to answer a question about a spread-sheet. Install extra memory and you can leave your letter open while you refer to last month's sales figures. You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

### PLUG IN INSTALLATION

Adding memory doesn't require technicians in lab coats. You don't even need a soldering iron. Just open your Mac, slide out the main circuit board, and plug in your memory card. Complete installation instructions are included with each memory kit.



Our helpful sales and technical staff is standing by to answer any questions and take the mystery out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs — (2@\$89each).



To upgrade a . 4-socket Mac Plus or SE to this amount of memory	Do this: (install in multiples of two only)
2 MB	Remove all four existing 256K SIMMs, install two 1M SIMMs, leave two sockets for future expansion.
2½ MB	Remove only two 256K SIMMs, install two 1M SIMMs.
4 MB	Replace all four 256K SIMMs with four 1M SIMMs.
To upgrade an 8-socket Mac II, IIx, IIcx, or SE30 to this amount of memory	Do this: (install in multiples of four only)
4 MB	Remove all four existing 256K SIMMs, install four 1M SIMMs, leave remaining sockets for future expansion.
5 MB	Keep existing 256K SIMMs, install four 1M SIMMs in remaining sockets.
8 MB	Remove all four 256K SIMMs install eight 1M SIMMs.

To open your Mac Plus or SE, you'll need a specially designed tool — it's available from us as part of a handy tool kit for just \$15.

### WHAT YOU NEED TO KNOW

Memory chips come factory-installed on plug-in cards, called SIMMS (Single Inline Memory Modules). Each one megabyte SIMM card holds eight top quality, memory chips. We carry chips by all the major manufacturers like Texas Instruments, Intel and Samsung. We also carry the full line of Dove memory products.

\*Prices can vary a lot, based on quality, speed and demand. At press time

our price for 1MB, 120 ns Memory kits is \$89 Please call for the very latest prices and availability. Our sales staff will tell you what you need and help make your choice an easy one.

### SPEED

Do you need 80, 100 or 120 Nanosecond (ns) chips? Nanoseconds are billionths of a second, so an 80 ns chip responds faster than a 100 ns chip. The original Mac used relatively slow 150 ns memory chips. The 68020 processor 20 ns (or faster) chip, and the

needs 120 ns (or faster) chip, and the 68030 Macs like the speedier model.

### OVERNIGHT DELIVERY

Place your order by 12:00a.m.(E), week-days and we'll deliver overnight for just \$3.00. There's never been a better time to consider a memory upgrade. Call our toll-free number now and tomorrow morning your Mac will be off to a brand new start.

### **MadVAREHOUSE**1-800-255-6227

1-800-255-6227

Call toll-tree
Twenty-four hours a day,
seven days a week.
Inquiries 1-201-367-0440
Fax 1-201-905-9279

Micro Warchouse Inc.

### MACWAREHOUSE 30 DAY MONEY BACK GUARANTEE

If, for any reason, you are dissatisfied with your MacWarehouse Memory Kit, you may return it for a full refund within thirty days of purchase. All you have to do is call us for a return authorization number and return the product, postage paid, in its original condition, with the original packaging and documentation.

ONE YEAR WARRANTY. MacWarehouse also guarantees its Memory Kits against manufacturer defects for one year from the date of purchase. We will repair the item or replace it at our discretion.



# Turn your Mac into a System 7 Powerbouse for only \$449

In a matter of weeks, Apple will release SYSTEM 7 and make it available to all existing Mac users! And there's a large pool of SYSTEM 7 software ready to run RIGHT NOW! Soon, the multi-tasking capabilities of SYSTEM 7 will allow your Mac to run new and much more powerful applications.

But this new intelligent software will make the Mac more "power-hungry" than ever. And to fully utilize SYSTEM 7 you'll need a 68030 processor which gives access to virtual memory — allowing the computer to use your hard disk as extended RAM.

### PRICE BREAKTHROUGH!

Thanks to some ingenious new technology, we're able to offer the Dove Marathon 030 upgrade, including the necessary 68030 processor for the astonishing price of \$449.



You'll be amazed at the increase in speed of your present applications with the Marathon 030 Upgrade. You'll race through graphics and database processing at speeds equivalent to computers costing thousands more. And as soon as SYSTEM 7 is available — you'll be ready to run the new applications.

### WHAT DO I NEED?

The upgrade is easy to install in not much more than half an hour and comes with complete step-by-step instructions. You may need a simple tool kit to open your Mac — price \$15.

To run SYSTEM 7 you must have at least 2 megabytes of RAM, and an enhanced (128K bytes) ROM. The Mac Plus, SE, SE/30 and the Mac II series all have the enhanced ROM, so the only other expense is an extra megabyte of RAM if your computer only has 1MB. Since you have to install 1MB memory chips in pairs, this could cost about \$200.

### MA MO

### MACWAREHOUSE 30 DAY MONEY BACK GUARANTEE

If, for any reason, you are dissatisfied with your purchase of any of these items, you may return it for a full refund within thirty days of purchase All you have to do is call us for a return authorization number and

may return it for a full retund within thirty days of purchase All you have to do is call us for a return authorization number and return the product, postage paid, in its original condition, with the original packaging and documentation.

MACWAREHOUSE 120 DAY GUARANTEE

In addition, every item we sell comes with the MacWAREHOUSE 120 Day Guarantee. If your selection is defective in any way, all you have to do is call for a return authorization number. Defective software will be replaced immediately. Defective hardware will be replaced at our discretion

### PLUS, AN INCREDIBLE \$250 VALUE!

To keep your newly upgraded system on track, we've bundled two state-of-the-art maintenance utilities with this offer. SAM 2.0 - Symantec Antivirus for Macintosh operates to identify and eradicate viral infections. SUM II - Symantec Utilities for Macintosh is used for more urgent disaster relief such as crashed disk and deleted file recovery, back-up and security.

SYSTEM 7.0

### **CALL NOW!**

Don't miss the chance to supercharge your Mac to SYSTEM 7 capability now. Our helpful staff of Mac fanatics is standing by to take your call. We'll help you select just what you need and get you off and running on the new system!

### MacVAREHOUSE 1-800-255-6227

24 hours a day, 7 days a week. Inquiries: 1-201-367-0440 Fax: 1-201-905-9279

1 MaraThon 030 will not work with Mac 128/512

MWFØF



### Buy a Hard Drive Now And Save Up To \$350

"The best deal in hard drives just got better!"

Between now and May 31st MacWarehouse is offering savings on every hard drive we sell. So, if you're thinking of buying a new hard drive, your timing couldn't be better. Check

out our sale prices and your savings, compared to our December 1989 prices, in the chart.

We offer drives by leading manufacturers like Cutting Edge, C.M.S., Quantum, Dolphin, PLI Infinity Turbo and others — all at unheard of low prices.

Let our helpful sales staff take the hassle out of buying a drive. They'll tell you which drive

mechanism each manufacturer uses. They'll also tell you about access speed, reliability, software and the manufacturer's warranty.

### MONEY BACK GUARANTEE

They'll tell you which drives come with the MacWarehouse 30-day money back guarantee. Try one at home. And if, for any reason, you're not 100% satisfied,

20 + MB		30 + MB		40 + MB		60 + MB		80 + MB		***40 + Removable	
SALE PRICE	YOU	SALE PRICE	YOU	SALE PRICE	YOU	SALE PRICE	YOU	SALE PRICE	YOU	SALE PRICE	YOU
339	\$100	389	\$110	449	\$100	489	\$140	549	\$190	729	\$170
429	\$100	499	546	589	\$36	649	\$50	769	\$30	839	\$36
389	\$110	439	\$156	499	\$220	589	\$189	645	\$350	799	\$340
-	-	569	520	619	\$26	-		-	-	999	\$120
-	-	-	-	399	\$126	-	3=1	649	\$220	-	-
	339 429 389	SALE YOU PRICE SAVE  339 \$100  429 \$100  389 \$110	SALE YOU SALE PRICE SAVE PRICE 339 \$100 389 429 \$100 499 389 \$110 439 - 569	SALE YOU SALE YOU PRICE SAVE  339 \$100 389 \$110  429 \$100 499 \$46  389 \$110 439 \$156  569 \$20	SALE PRICE         YOU SAVE PRICE         SAVE PRICE SAVE PRICE           339         \$100         389         \$110         449           429         \$100         499         \$46         589           389         \$110         439         \$156         499           -         -         569         \$20         619	SALE PRICE         YOU SAVE PRICE         SAVE SAVE SAVE SAVE PRICE SAVE         YOU PRICE SAVE SAVE PRICE SAVE           339         \$100         389         \$110         449         \$100           429         \$100         499         \$46         589         \$36           389         \$110         439         \$156         499         \$220           -         -         569         \$20         619         \$26	SALE PRICE         YOU SALE SAVE PRICE         YOU SAVE PRICE SAVE PRICE         SALE SAVE PRICE SAVE PRICE         YOU SALE SAVE PRICE SAVE PRICE         SALE SAVE PRICE SAVE PRICE         YOU SALE SAVE PRICE         SALE SAVE PRICE SAVE PRICE SAVE PRICE         SALE SAVE PRICE	SALE PRICE         YOU SAVE PRICE         SALE SAVE PRICE         YOU SAVE PRICE         SALE SAVE PRICE         YOU SAVE PRICE         SALE SAVE PRICE         YOU SAVE PRICE         SAVE PRICE         YOU SAVE PRICE         SAVE PRICE         YOU SAVE         SAVE PRICE         YOU SAVE         SAVE PRICE         YOU SAVE         SAVE PRICE         SAVE         YOU SAVE         SAVE         PRICE         SAVE         PRICE <td>SALE PRICE         YOU SAVE PRICE         SAVE PRICE SAVE PRICE         YOU SAVE PRICE SAVE PRICE SAVE PRICE SAVE PRICE         SALE SAVE PRICE SAVE PRICE SAVE PRICE SAVE PRICE SAVE PRICE           339         \$100         389         \$110         449         \$100         489         \$140         549           429         \$100         499         \$46         589         \$36         649         \$50         769           389         \$110         439         \$156         499         \$220         589         \$189         645           -         -         569         \$20         619         \$26         -         -         -         -</td> <td>SALE PRICE         YOU SAVE PRICE         SAVE PRICE SAVE PRICE         YOU SAVE PRICE SAVE P</td> <td>  20 + MB   30 + MB   40 + MB   60 + MB   80 + MB   Remote SALE   YOU   YOU</td>	SALE PRICE         YOU SAVE PRICE         SAVE PRICE SAVE PRICE         YOU SAVE PRICE SAVE PRICE SAVE PRICE SAVE PRICE         SALE SAVE PRICE SAVE PRICE SAVE PRICE SAVE PRICE SAVE PRICE           339         \$100         389         \$110         449         \$100         489         \$140         549           429         \$100         499         \$46         589         \$36         649         \$50         769           389         \$110         439         \$156         499         \$220         589         \$189         645           -         -         569         \$20         619         \$26         -         -         -         -	SALE PRICE         YOU SAVE PRICE         SAVE PRICE SAVE PRICE         YOU SAVE PRICE SAVE P	20 + MB   30 + MB   40 + MB   60 + MB   80 + MB   Remote SALE   YOU   YOU

Savings are calculated from MacWarehouse December 1989 published prices. \*Quantum drives are for internal installation and require a 3.5 Internal Drive Kit for \$75 \*\*PLI is a 50meg turbo drive. \*\*\*40 + meg Removable Cartridge Drives come with 1 cartridge. Additional cartridges available.

just return it to us within thirty days and we'll refund your money.

Then there's the MacWarehouse Loaner Drive Program. Buy from MacWarehouse and if you ever have a problem, you won't be without a drive for more than a few hours.

### **READY TO USE**

A hard drive from MacWarehouse couldn't be easier to use. We'll tell you which ones come pre-formatted — ready to use right out of the box. You just plug in, turn on your Mac and go!

If you do need any help, the Mac-Warehouse Technical Support staff is standing by our toll-free lines to assist you.

### LIMITED TIME OFFER

MacWarehouse sale prices, based on capacity, are shown in the chart. Also shown are the savings from pre-holiday prices. (This is a limited time offer, valid

through May 31, 1990.) Overnight delivery is just \$3, anywhere in the Continental United States.

So call us now and tomorrow morning you'll be up and running with the best hard drive deal in the business!

### Madvarehouse

1-800-255-6227

Call toll-free
Twenty-four hours a day,
seven days a week.
Inquiries 1-201-367-0440
Fax 1-201-905-9279

© Micro Warehouse Inc.

### MacWarehouse 30-Day Money Back Guarantee

Many of our drives come with the MacWarehouse 30-Day Money Back Guarantee. If, for any reason, you're not completely satisfied, call us within thirty days of receipt for a return authorization number and full refund of the purchase price.

y of our products come with a thirty day money k guarantee, if you are not completely satisfied. Ask for details when you place your order.

### VERNIGHT DELIVERY (See details below) White Knight 11.0 (Freesoft) White Knight is Scott Walson's successor to the legendary Red Ryder telecommunications program Is a proportion to the legendary Red Ryder telecommunications program Is a program to the program Is a progr

to the legeridary Near Yater the Continua-cations program. It's more than just a new version - the added new features list alone is more than 20 pages long! The 270+pg, manual has plenty of step by step tips to help beginners communicate like the pros in no time. White Knight comes bundled with Okyto, a revolutionary Mac-to-Mac file transfer program. A free subscription to the GEnie network is also provided. (communications) \$85.

Ergotron	
MacTilt-SE	68.
MacTilt II-RGB	75.
Goldstein & Blair	
The Macintosh Bible	20
ICD	ALL MANAGES
Graflex	84
I/O Designs	
Imageware II Carrying Case	49
Macinware Ilcx Carrying Case	
Macinware Mac II Carrying Case	
Macinware Plus Carrying Case	
Macinware SE Carrying Case	75.
Monitorware Apple RGB Case	79.
Monitorware Apple AGB Case The Ultimate SE Carrying Case	79.

UnMouse (MicroTouch)
The UnMouse does everything a mouse can - only

faster, easier, and in less space. To move the cursor,

simply slide your finger over the glass surface. To

make a selection, merely press down. The UnMouse also serves as an extended keyboard. Tap the large

red button and you have a Power Keypad with 16 keys instantly available to execute macros (60 in

advanced mode). With its

one million touch points the

UnMouse also performs as a small graphics tablet.

Requires a Mac with ADB

port. (input) \$189.

Polaroid Circular Polarizing Filter ......35. Targus, Ltd.
Deluxe Plus/SE-XKB Case (black) .... 69.
ImageWriter II Case (black) .... 45.
Mac Plus/SE Case (black) .... 55. Ilcy /Ilci Case

MacKids Preschool Pack (Nordic Software) Color animation, graphics and

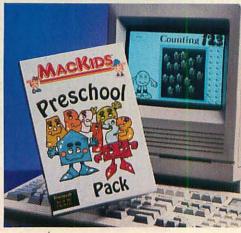
voice technology to teach learning FUNdamentals. In-cludes six different lessons.

recognition and keyboard layout. BarMath uses blocks to teach basic number concepts. Concentration develops short term memory skills.

AlphaWorks teaches letter

Connect the Dots teaches number and letter sequence. Counting 1,2,3 develops

counting skills through matching numbers with objects. ShapeWorks teaches shape recognition by matching shapes based on patterns, size comparison, color, etc. (education) \$35.



VIII NELL		
	Mark States	
	ia (a	
(dip)		

### Dac-Easy Light ......42. Managing Your Money ......124. Nolo Press For The Record ......29. Softview Softview 65. MacInTax Federal '89 - 1040 65. State supplements ea. 56. MacInTax/Quicken 1.5 bundle 95. Taxview 1040 355. Survivor MacMoney 3.5 ......59. **BLANK MEDIA**

 Sony
 DS/DD (box of 10)
 13.

 DS/HD (1.44 mb)
 24.

### Kensington 33. Anti-Glare Filter 34. Apple Security System 34. LaserWriter II Security System 32. Mac II Stand w/Cable Kit 64. MasterPiece Mac II 105. PowerBacker 360 UPS Line 269. PowerBacker 800 UPS Line 749. PowerBacker 1200 UPS Line 949. System Saver 63. Kensington System Saver ......63 **Mobius Products** Fanny Mac QT 55. SE Silencer 39.

Macintosh SE/Plus w/Extended Keyboard

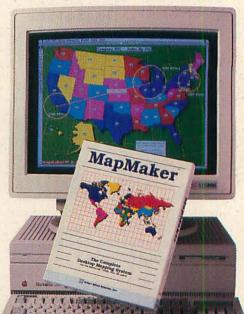
Carrying Case (Targus)
Pamper your Mac with a Targus carrying
case made of Zilicone treated nylon to give
you waterproof durability and an impact
absorbing high-density foam Jayer with a soft protective lining for complete protec-tion. Cushioned shoulder pad and handles provide extra comfort and convenience. Plus there's room for every-

thing from your Mac, a hard disk drive, and the extended keyboard to pockets for your mouse, floppies, cables, and pens. Full Macintosh line available in black. Some styles available in blue, burgundy, and platinum. (accessories) \$69.

### ACCOUNTING & PERSONAL FINANCES

Aatrix	
Checkwriter II	37.
Payroll 3.5	109.

MapMaker 4.0 (Strategic Mapping, Inc.) Now includes dozens of powerful new features such as built-in drawing tools, on-screen distance measurements, graphics tablet support, and much more. Creates publication quality color maps of the U.S. by states and counties, and the world by country. Enter or import your own data, or use the included U.S. census statistics. Quickly displays hidden relationships in geographic data with striking presenta-tion graphics. Mac 512K, Plus, SE and II. (graphics) \$295.



B.A.S.F. made in U.S.A



**ACCESSORIES** 

HardTop ImageWriter Covers 17.
Keyboard Flip 6.
Dust Covers - Grey Nylon Ripstop
ImageWriter or LaserWriter 12.
Mac Plus and keyboard 11.
Mac SE & extd. or reg. keyboard 11.
Mac II and extd. keyboard 12.
Universal Laser Printer Stand 28.

Utility Pac ......11.

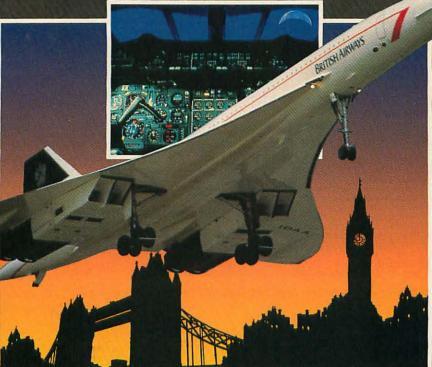
**American Power Conversion** 110 SE UPS .....

**Apple** 

### WIN A TRIP TO LONDON ON THE CONCORDE

British Airways Super-sonic Concorde — en New York to London in just over three hours! Superb comfort at twice the speed of sound. At 60,000 feet the sky is dark blue and you can see the curvature of the earth. experience.

can win a fabulous four day. all expense paid trip by Concorde to the MacUser U.K. Show, November 7-10, 1990, in the Mac-Warehouse Concorde to London Contest. You'll meet some



Warehouse U.R. and find out how the Mac

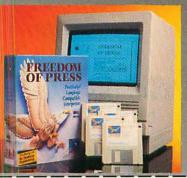
the drawing when you order from Mac

And don't forget, nobody beats Mac-Warehouse for great support and our Midnight Express Service Order until twelve midnight for overnight delivery. The price is still just \$3. Nobody does it faster than MacWarehouse nobody!

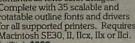


### FREE CATALOG!

We carry more than 1200 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. If you can't find what you need, call us for a free copy of our latest catalog.



Freedom of Press 2.1a (Custom Applications, Inc.) Print PostScript ianguage files using more than 50 different print-ers and film recorders. In combination with your favorite desktop nation with your favorite desktop publishing, graphics, drawing, painting and word processing software, Freedom of Press allows you to print PostScript language files, including support for 24 bit continuous tone color images. Complete with 35 scalable and rotatable outline fonts and drivers for all supported printers. Requires Macintosh SE30, II, IIcx, IIx or IIci. (mility) \$259. (utility) \$259.



MWFØ

### OFFICIAL ENTRY COUPON

Concorde to London Contest

1690 Oak Street, P.O. Box 1579, Lakewood, NJ 08701

When you order by phone or mail, you are automatically entered in the drawing. You can also mail this coupon or call our contest entry line. 1-800-367-0787. (In CT., call 1-203-852-8968)

Name			
Address	CANCEL DIVI	Apt	
City	State	Zin	



Dreams (Innovative Data Design)
IDD, creator of MacDraft, offers a powerful precision drawing tool for professional scaled drawings, lifustrations, presentations and general purpose graphics. Dreams offers zoom, rotation, layers, dimensioning, symbol libraries and a vast array of drawing tools, as well as many advanced illustration leatures. You can merge shapes together, cut edges of objects using other objects as templates... even glue lines and curves together to form unique shapes to be filled with colors or patterns. (graphics) \$325.

Stuffit Deluxe (Aladdin Systems, Inc.)
Stuffit Deluxe is the newest generation of the industrystandard compression, encryption, and archiving application. An easy to-use interface and one-step QuickStuff/
QuickUnStuff features allow beginners to benefit immediately. With over 75 new features, it employs many new
state-of-the-art compression (including file-specific optimizers) and new security methods. Multiple archives
can be opened and manipulated in a Finder-like fashion
(with sorting, copying, renaming, or deleting). ViewIt
brand viewers, a complete HyperTalk-like scripting language, and IBM-PC support (with dearc and unzip) are
included. (utility) \$63.



I'm Kerry, call me at:

### Wag/////Stationiza

1-800-255-6227

(1-800-ALL-MACS)

Inquiries: 201-367-0440 FAX: 201-905-9279

Cail anytime - day or night 24 hours a day, seven days a week

\*Midnight Express service available weekdays.





### Different Drummer

March to the tune of a MIDI drummer. Compose patterns, songs and jams. Sound output via Mac or MIDI, exports MIDI files for use with sequencers. Enter notes in real time, or drag notes into place with the mouse. Very easy to use! (music) \$ 59.



Relational Objex

Relational Objext Relational Objext Relational Objext takes ordinary object-oriented drawing programs a step further. It adds the ability to link objects to other objects. Whenever you move orre-size an object, all the other linked objects will change accordingly. Use it to create animated illustrations, Gantt charts that under automatically floor. that update automatically, floor plans that change with new specifications, etc. (graphics) \$150.



Easy Color Paint Power Packed Palette! Jammed with features, Easy Color Paint delivers thrills and excitement to any would-be Piccaso within mouse-reach of your Mac. In-cludes 17 tools, 256 colors, user defined patterns, multiple color palettes, coloring modes and much more. (graphics). \$45



Publish Itl

Complete self-contained desktop publishing program. Al-lows both professional & non-professional business communicators to write, design, and produce dynamic, sophisti-cated documents. From simple in-house newsletters & busi-ness forms to full-length maga-zines and distinctive annual reports; do it faster and easier than before! publishing) \$225. (desktop

### DATABASE SOFTWARE

Acius	
4th Dimension 2.0	515.
AEC Information Manager	409.
Blyth Omnis 5	375.
Claris FileMaker II	210
Fox Software	
FoxBASE+/Mac Odesta	295.
Double Helix III	
GeoQuery	198.
Panorama	257.

DESK ACCESSORI	ES
Casady & Greene	
QuickDEX	31.
JAM Software	-
Smart Alarms & Appt. Diary	49.
Smart Alarms (1 - 4 users)	99.
Smart Alarms (5 - 8 users)	149.
Smart Alarms (9 - 15 users)	199.
Smart Alarms (16-25 users)	299.
Preferred Publishers	
DAtabase 1.5	69.
Vantage 1.5	52.
Solutions	
SmartScrap & The Clipper 2.0	45.
Vision Software	
Form Layout	35
, , , , , , , , , , , , , , , , , , , ,	

### 110 SE UPS (American

Power Conversion)
It fits neatly under your Mac and provides up to 20 minutes of clean power. A built-in rechargeable battery prevents data loss and equip-ment damage. During normal operation, it protects against surges, spikes and power line noise. (accessory) \$269.

Power Chute

Upon power failure Power Chute alerts all network users and initiates a graceful shutdown of the AppleShare Network. It com-municates with a signalling American Power Conversion UPS (such as the 110SE or 307ci). (utility)



### **DISK DRIVES/BOARDS**

CMS	
MacStack 20 Meg	429.
	499.
	589.
	649.
	Removable 839.
The state of the s	

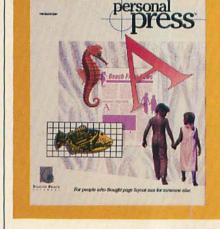
Personal Press (Silicon Beach) Personal Press creates profes-sional layouts for you. Forget the long, steep learning curve, because Personal Press has

AutoCreate to assemble stories and graphics into templates. It includes a full-featured word processor with spelling checker and thesaurus, controls for scanned images, spot color separations, posted notes, link navigator, extensive page pre-viewing, and on-line help. (desktop publishing) \$199

### Flipper 44 Meg ......829. Fujitsu 800K Disk Drive .. **Kennect Technology** Rapport ..... ......199. Turbo Floppy 1.4 ......359. Quantum

### EDUCATIONAL/ PERSONAL

Beacon Technology	
GEMS of the Word	25.
BrightStar	
Alphabet Blocks	30.
Talking Tiles	27.
Davidson	
Math Blaster Mystery	26
Speed Reader II	26
Fair Tide Technologies	
Navigatel mono.	199.
First Byte	111111111111111111111111111111111111111
The Dinosaur Discovery Kit	27
The Puzzle Storybook	27
The Rhyming Notebook	27
The thirty in might decode in the time.	



### DESKTOP PUBLISHING

Aapps	
MicroTV	275.
Aldue	
PageMaker 4.0 or PrePrint	Call.
Broderbund	
DTP Advisor	47.
Data Translation	
PhotoMac	609.
Emerald City Software	
Smart Art I, II, or III	ea. 84.
Letraset	
ColorStudio or FontStudio	Call.
ImageStudio Ready,Set,Gol	275.
Heady, Set, Go!	2/5.
Olduvai	045
Read-Itl 2.1 (OCR)	245.
Read-It! TS (ThunderScan)	125.
Quark	79.
QuarkStyle	160
Xpress	470
Silicon Beach	410.
Personal Press	199
Spinnaker/Springboard	100.
Spinnaker/Springboard PLUS	115.
Springboard Publisher II	109.
TimeWorks	anata tumbh
Publish-It!	225.

Cutting Edge	101.020
800K External Floppy Drive	149.
SyQuest Removable 45 Meg	799.
Under the Mac 20 Meg	339.
Under the Mac 30+ Meg	
Under the Mac 45+ Meg	449.
Under the Mac 60+ Meg	
Under the Mac 80+ Meg	
Dayna Communications	
Dayna File Single 360K (5 1/4")	525.
Dayna File Dual 360K & 1.44M	749.
Dolphin Systems Tech	
Integra 20 Meg	389.
Integra 30 Meg	
Integra 40 Meg	

The "ULTIMATE" SE Carrying Case (I/O Design, Inc.)
The "ULTIMATE" SE Carrying Case is de-

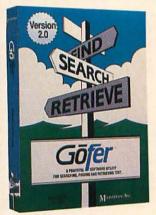
signed with the same high quality stan-dards as other MacLuggage products. This case offers internal, padded compart-ments for ANY Macintosh keyboard, mouse, external hard disk and cables. It also features 2 additional exterior pockets for everything from disks to umbrellas. Combine these features with sturdy Du-pont Cordura nylon and 1/2 inch high density foam padding and you'll see why this is the "Ultimate" carrying case for your Mac. (accessories) \$79.



### 

### BUSINESS & PRESENTATION

A Lasting Impression	
ResumExpert (word vers.)	39
Cover Letters or Students	
Managers or Sales & Marketing	
Healthcare or Finance & Banking	ea 39
Education or Glamour Profs	ea 39
Comp. Sciences & Engineering	39
Adaba Oustanna Ina	
TrueForm SetUp	225
FastTrack Schedule	115
Aldus	113.
Persuasion 2.0	220
Antic Software	523.
FlexForm Bus. Temp Vol 1 or 2	00 45
Claris	ea. 45.
MacProject II	260
SmartForm Designer w/Assistant	309.
Cognition Technology	295.
MacCMADTC DDO	040
MacSMARTS PRO	249.
Cricket (Computer Associates)	445
Cricket Graph 1.3	115.
Cricket Presents	285.
Imagine That! Extend	000
	339.
Informix	040
WingZ 1.1	249.
Kaetron	
Top Down	199.



GOfer (Microlytics)

The ultimate text finder. A powerful soft-ware utility that searches, finds and re-trieves text. Searches through countless files on your hard disk drive or floppy disks to find the text you need. A phrase, a fact, a note, a date. If you need it, GOfer finds it in seconds. You can automatically import the section of text into the document you're currently working in. You save hours searching through files. GOfer operates as a Macintosh desk accessory. (utility) \$45.

Microsoft	
Excel 2.2 or PowerPoint 2.1	. ea.249.
The Microsoft Office	
Works 2.0	
Portfolio Systems	
Dynodex-w binder & paper	95.
Paper	14.
Power Up	
Address Book Plus	53.
Address Book Plus w/Binder	
Calendar Creator	38.
FastForms!	89.
Letter Writer Plus	53.
Preferred Publishers	
Direct Mail	54.
ProPlus	
Wall Street Investor	449.
Satori	
Bulk Mailer 3.2.3	77.
Softstream International	
Endeavour Planner	95.
Symantec	
More II 2.01	269.
Symmetry	
KeyPlan	245.

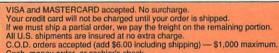


SYNEX

PixelPaint Professional (SuperMac Technology) PixelPaint Professional photo-realistic paint capa-bilities let your imagina-tion tinker with reality. Don't settle for manipulat-ing images...create them with PixelPaint Professional! Offers an array of advanced paint tools for dazzling special effects. Choose from full transpar-ency control, dynamic masking, image merging and a sophisticated air-brush tool. Use 8-to-32 bit color while selecting from a spectrum of custom palettes and color pickers including 4-color process, RGB, and PAN-TONE. (graphics) \$389.

SYNEX	
MacEnvelope 5.079.	
MacEnvelope Plus219.	Dow Jones
MacPhonebook51.	News/Retrieval Membership24.
Vertical Solutions	Farallon
FastLabel 2.089.	Timbuktu 3.0
	Timbuktu Remote 1.0.1 125.
CAD/CAE	TrafficWatch125.
CAD/CAL	PhoneNET PLUS33.
Claris	PhoneNET Repeater315.
ClarisCAD595.	PhoneNET Star Controller 825.
Graphsoft	FreeSoft
MiniCad CO 510	White Knight 11.085.
MiniCad+2.0	Infoonboro
Innovative Data Design MacDraft	Infosphere Liaison175.
MacDraft175.	Lidisoff
I.S.I.	InSignia Solutions
Precision155.	Soft PC (Mac II)245.
Strata	Microcom Software
StrataVision 3D375.	Carbon Copy Mac119.
	Prodigy
COMMUNICATIONS	Mac Starter Kit27.
	Prometheus
& NETWORKING	Acknowledge289.
	Acknowledge
CE Software	Software Ventures
In/Out (1 to 5 Users)128.	Software Ventures Microphone II v.3.0215.
QuickMail 2.2 (1-10 Users)319.	TOPS
CompuServe	NetPrint119.
CompuServe Navigator 3.039.	FlashBox or Repeater119.
CompuServe Subscription Kit24.	FlashCard
DataVIZ	Teleconnectors
MacLink Plus w/Cable 4.1119.	TOPS 3.0 Network Bundle
MacLink Plus/Translators 4.1 99.	TOPS DOS Network Bundle 165.
Dove	Traveling Software
FastNet SCSI749.	Lap Link
FastNet III375.	Lap-Link III Connectivity Pac119.
FastNet SE or SE/30ea. 375.	Lap-Link III Network Pac189.





Cash, money order, or cashler's check.
Corporate purchase order accepted subject to credit approval.
All products are covered by a 120 day limited warranty.
Sales Tax: CT residents add 8%, NJ residents add 6%. Ohio residents add appropriate tax.

SHIPPING

HIPPING

All orders add \$3.00 per order. We ship Airborne Express overnight unless
UPS Ground delivers overnight. (Some rural areas require an extra day.)
Orders placed by 12:00 Midnight (EST) (weekdays) for "in stock" items ship same day (barring system failure, etc.) for overnight delivery.
C.O.D. orders ship via UPS (Blue Label if you are more than 2 days from us via UPS Ground). Charge is \$6 including shipping.
Alaska, Hawaii, outside continental U.S., APO/FPO call 201-367-0440 for information.

\*Defective software replaced immediately. Hardware replaced or repaired at our discretion

I'm Kerry, call me at: 0-255-622 (1-800-ALL-MACS) Now works in Canada.

Inquiries: 201-367-0440 Fax # 201-905-9279 Mac Valentions

1690 Oak Street, P.O. Box 1579, Lakewood, NJ 08701

ORDER TOLL-FREE 24 HOURS A DAY





Dust Covers

Basic Needs dust covers look great! Machine stitched and custom fitted. The covers are made from washable rip-stop nylon that won't crack, yellow, or fade like similarly priced vi-nyl. (accessories) Starting at \$11.



Dynodex-w/binder & paper Manages your names and addresses faster than anything on the Mac: dial, find, change, sort,

select, import, export, merge, and more. Includes "no fuss" forms to print 300 double-sided pages to Filofax and other personal organizers. (business) \$95



MicroPhone II 3.0

MicroPhone II scripting lan-guage makes using electronic mail services an automatic opmail services an automatic operation. Other types of file transfers are equally effortless. Micro-Phone II now supports the hot new ZMODEM, transfer protocol (in addition to XMODEM, YMODEM, KERMIT, and MacTerminal 1.1), and can operate moderns at any speed. erate moderns at any speed from 50 to 57,600 baud. (communications) \$215.

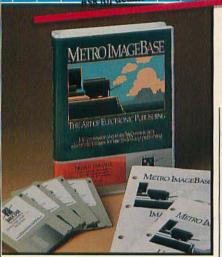


CanOpener 1.1

Information retrieval utility for the Mac. Search anywhere, and lets you retrieve just about anything; including text, pictures and sounds. Locates text inside and sounds. Locates text inside pictures, and gives you the whole picture! Anything you retrieve with CanOpener can be stored in its library, so the next time you need it, it's just a click away (utilish) & & & away. (utility) \$64.

Many of our products come with a thirty back guarantee, if you are not completely satisfied

sk for details when you place your order.



Help Software, Inc.
Desktop Help for Excel50
Learning Company
Learning Company
Math Rabbit or Reader Rabbit ea. 31
Nordic Software (full line available)
MacKids Turbo Math Facts28
MacKids Preschool Pack35
Mackida Mard Ougat
MacKids Word Quest30
Penton Overseas
VocabuLearn French, Spanish, German
Italianea. 29
VocabuLearn Japanese35
Voice & Video Instruction Videos
HyperCard or Pagemaker 3.0 ea. 35
Word 4.0 Video Tape35
Trois no troop rapo miniminimo

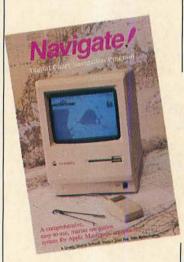
### **ENTERTAINMENT**

Access Software, Inc.	
World Class Leader Board	200
	20.
Artworx	
Bridge 6.0	24.
Daily Double Horse Racing	10
CrailQuest	10.
GrailQuest	19.
Broderbund	
Ancient Art of War At Sea	27
Shufflepuck Cafe	24
Simileback Cale	24.
Where in the World is Carmen	21.
Bull City Software	
Moriarity's Revenge	32
Bullseye	o
Dullseye	4000
Ferrari Grand Prix or P51	ea 32.
Fokker Tri-plane	24.
Centron Software, Inc.	
BlackJack or CrapsMaster	0 27
One in the control of	a 21.
CasinoMaster (5 pack)	49.
Electronic Arts	
Chuck Yeager Adv. Flight Trainer	32
	02.
Miles Computing	
Fool's Errand	
Puzzle Gallery	27.
Mindscape	O. C.
Balance of Power, or Deja Vu e	- 00
balance of Power, or Deja vu e	a. 29.
Hostage or Colonye	a. 29.

### Metro ImageBase Electronic Art

(Metro ImageBase)
High quality 300 dpi electronic art from one of the world's leading publishers of ready to use art. Enhance brochures, menus, reports, newsletters and presentamenus, reports, newsietters and presenta-tions. One large image per file - 100 per package. Packages available: Newsletter Maker, Business Graphics, Computers & Technology, ReportMaker, Borders & Boxes and 9 others. (graphics) \$76. each

Nemesis	
Go Master	49.
Joseki Tutor	30
Softstream	00.
22nd Street or MacRummy	22
The Software Toolworks	52.
	00
Cribbage & Gin King	39.
Life & Death or ChessMaster	32,
The Hunt for Red October	32.
Strategic Simulations	
Pool of Radiance	32.
Three Sixty	
Sands of Fire	32
Visionary Software	oc.
Synchonicity	30
XOR/PCAI	55.
	0.4
Lunar Rescue or MacGolf 2.0	
MacGolf Classic	53.
Road Racer	39.
NFL Challenge	54.
TaskMaker	29.



### **FONTS**

Adobe	
Adobe Type Manager 1.2	59.
Plus Pack	109.
Type Set 1 or Type Set 2	ea. 59.
Fonts (full line avail.)	Call.
Forms and Schedules	279.
Newsletters	229.
Presentations	279.

Smart Alarms and Appointment Diaries (JAM)

The ultimate reminder system. Smart Alarms desk accessory creates reminders which interrupt you at an appointed time. Features snooze up to to 1 hour, printing, choice of beeps, & text editing reminders. Appointment Diary desk acces-sory calendar for appoint-ments. Features: Auto-layout, Day Layout, set reminders directly into Smart Alarms, Week at a view, Month at a glance, printing. Multi-User requires AppleShare or TOPS. (desk accessories) single user \$49, 1-4 users \$99, 5-8 users \$149, 9-15 users \$199, 16-25

### OVERNICHT DELIVERY

Altsys	
Fontastic Plus 2.02	52
Fontographer 3.05	249
Metamorphosis	149
The Art Importer 2.0	
Emerald City Software	
TypeAlign	60
Letraset	in and the second
LetraStudio	275
LetraFonts (various)	ea. 69
Tactic Software	
ArtFonts Vol.1, 2 or 3	ea 55

### CDADLICE C DECICN

GRAPHICS & DESIG	UIY.
3G Graphics Images w/Impact Graphics & Symbols 1	51
Business 1 or Accents & Brdrs 1 . Adobe	. ea.65.
Illustrator 88 1.9.3	279.
StreamlineAldus	229.
Freehand 2.0 Aperture Technology	
Aperture Visual Information Mgr Broderbund	729.
Drawing Table TypeStyler	
Claris MacDraw II	
MacPaint 2.0 Creative Software	95.
Easy Color Paint Deneba	
Canvas 2.1Ultra Paint	189.
Digital Vision Computer Eyes B&W	199.
Computer Eyes Pro Color	349.

Navigate! (Fair Tide Technologies)
Enter the world of Digital Chart Navigation. Navigate! allows you to display the precise position of your yacht on a detailed chart. Displays land mass, shoal lines, buoys and many other navigation aids. Has full course planning and tracking features. Includes interface for a position sensor (LORAN, SATNAV, GPS) and one chart. Available in color or mono. (education)
Navigatel mono \$199.

Dream Maker	
Cliptures, Business Images6	9.
MacGallery2	7.
Electronic Arts	202
Studio/19	6.
Studio/829	
Graphsoft	-
Blueprint	9.
Innovative Data Design	
Dreams32	5.
MacroMind	
MacroMind Director44	5.

### TaskMaker (XOR)

The world has plunged into depression and devastation...the once mighty kingdom is no longer. Your mission: to restore order and prosperity to the kingdom, but you have no experience. Explore lands, caves and castles. Discover precious riches, decipher cryptic messages and fight hellish beasties such as skeletons, zombies and giant caterpillars. To and giant caterpillars. To gain help, find the Task-Maker. With his guidance and your courage, the king-dom might be saved! (entertainment) \$29.



### 2400MFAX

"Just the Fax Ma'am...Just the Fax" Not anymore when you combine high-end fax capabilities with the power of your Mac! ties with the power of your Macl Part of the new Promodem Data/Fax Series, the 2400MFAX adds Group III, originate-only and 4800bps fax capabilities to the enclosed 2400bps data modem. Includes MAc-KNOWLEDGE and a customized version of BackFAX. (modem/fax) \$209.



### Listen

Play it by ear! Beginners and pros alike can hone their ear training skills when they Listen. You'll love using this exciting software package to master varying degrees of note, chord and interval recognition via an on screen piano & guitar or your external MIDI keyboard. (music)



### Address Book Plus

Address Book Plus
The most complete, ready-touse solution for managing
names, addresses, phone numbers, and other vital information. The program makes it
easy to print top quality address
book pages, phone lists, mailing labels, rotary-file cards, and
envelopes. Also includes a separate Desk Accessory for searching and failing (husingse) \$53 ing and dialing. (business) \$53. With leather binder \$99.





### AREHOUS





### Sands of Fire

Venture into the white-hot sands and sweltering intensity of WWII North Africa. Thoroughly documented with accurate historical data, Sands of Fire recreates actual battle scenarios of tank warfare in WWII. You can influence the outcome of up to 48 different battle engagements from Tobruk to the Kasserine Pass and more. (entertainment)

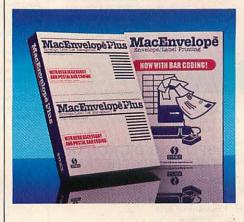


Bridge 6.0 is a comprehensive contract or duplicate bridge -playing program which allows you and your computer partner to bid against two computer opponents and play out the hand. Ideal way for the novice to improve his or her game, and advanced player to get into a game without having to round up three additional players.



Pool of Radiance
The fabled city of Phlan has been overrun by monsters led by a mysterious leader. Your quest: discover the identity of this evil force and rid Phlan of its scourge. The Adventurer's Jour-nal will help guide your party on many different missions with history, maps, clues and ru-mors. (entertainment). \$32.





### MacEnvelope 5.0 (SYNEX)

Switchboard is the first keyboard that is en-gineered to work on both IBM and Apple

**HYPERWARE** 

Complete HyperCard Handbook ..... 22. Beacon Technologies

HyperBible International Version ..... 175.

HyperBible King James Version ..... 145. Bright Star Technology

HyperAnimator 1.5.1 ......98.

HyperHit ......125

computers. (input/output) \$175.

Bantam

interFACE

HyperAtlas ....

Silicon Beach

Power Up

HyperTutor

MacEnvelope 5.0 delivers the look you want for per-sonalized mail. Import self-styled graphics and text to create unique envelope and label layouts. And save money on bulk mail-ing and speed delivery using MacEnvelope's Postal Bar Coding ability. Stores up to 1600 ad-dresses per file, sorted alphabetically or by ZIP code. (business) \$79. MacEnvelope Plus 2.0 Maintains up to 100,000 names per file. Provides list management features including comments, flags

### HARDWARE & **PERIPHERALS**

Cutting Edge	
Two Page 19" Monochrome Monito	POEO
	11 959.
General Computing Company	E7E
WriteMove Ink Jet Printer	5/5.
Magnavox	505
Color Monitor 14"	535.
Microtek	
Microtek MSF-300GS Scanner	1589.
Mobius	
Multiscreen Video Card w/	
Princeton 15" monitor	529.
Qume	
Crystal Print Publisher	2900.
Seikosha America	
Seikosha Printer (dot-matrix)	235.
Sharp	
The Wizard	229.
ThunderWare	
LightningScan	369.
ThunderScan 5.0	187.

Springboard	
Family Matters2	28
Symmetry	
HyperDA 1.24	19
HyperWorks Organizer	57

and multilevel sorts. (business) \$219.

### INPUT/OUTPUT

Altra Felix.

Felix (Altra)

Finally, a stationary mouse alternative that's quicker and easier to use. Felix uses just six inches of desk space to provide full speed cursor control. It utilizes Altra's "Optical Pointing Technology" and an onboard microprocessor to achieve very high resolution combined with simple use. Felix is more than a mouse, it's a productivity tool! No maintenance required. For all Mac SEs and IIs. (input) \$127.



HyperDialer (DataDesk International)
Now you can connect your Macintosh to your existing business or home telephone for automatic dialing with Apple's HyperCard. DataDesk's HyperDialer is designed specifically for HyperCard's touch-tone dialing capabilities and works with-line business phones without requiring a modern or dedicated phone line for auto-matic dialing. Automatically dials HyperCard, SideKick, Focal Point, C.A.T., SuperCard and QuickDex phone numbers. It connects to the speaker port - not a precious serial port. (hyperware) \$29.

Asher Engineering	
QuadLYNX Trackball	59.
Cutting Edge	CONTRACTOR OF STREET
CE-105 ADB Keyboard	125
DataDesk Intl.	120.
DataDesk Switchboard	175
Mac 101 Keyboards	139.
International versions	Call.
Kensington New Turbo Mouse	100
	109.
Kraft	
ADB Joystick Premium III (SE&II)	49.
QuickStick	39.
Trackball	79.
Kurta	
IS/ADB Tablet 8 1/2 x 11	255.
Micro Touch	
The UnMouse	189
Mobius	100.
Cordless Mouse	05
	95.
Mouse Systems A+ Mouse (SE/II)	70
A+ Mouse (SE/II)	79.
Practical Solutions	
The Cordless Mouse	95.
Mouse Master	57.
Summagraphics	
Bit Pad Plus	319.

### LANGUAGES

Digitalk, Inc.	
Smalltalk/V MAC	125
Microsoft.	
QuickBasic	65.



Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

### OVERNIGHT DELIVERY ILLILI NETWORK BUNDLE FOR MACINTOSH

Shana Corporation	
Inside Out	369.
SmethersBarnes	
Prototyper	189.
Symantec	
THINK'S C 4.0	168.
THINK'S Lightspeed Pascal	168.
Zedcor	
ZBasic 5.0	.89.

### MEMORY UPGRADES/ ACCELERATORS

1 MEG SIMMS Low Profile, 120ns High Quality Single In-Line Memory Modules for MacPlus, SE, II, IIx. ONLY \$89. 2 yr. Warranty.

Dove (full line available)	
MaraThon 030 Accelerator	449.
MaraThon 030X	449.
MacSnap 2S	209.
MacSnap 4S	
MacSnap 8S	
MacSnap 524E	
MacSnap 524S	239.
MacSnap 548S	499.

### MODEMS/FAX

Abaton	
InterFax12/48	265.
InterFax 24/96	
Best Data Products	
SmartOne 2400/1200	145.
Dove	ASSESSMENT NEW
DoveFax desktop	279.
DoveFax Networkable desktop	375.
DoveFax Nubus	449.
Networkable Nubus	749.
Hayes	
Smartmodem 2400	349.
Smartmodem 9600 (V series)	



### (See details belo TOPS 3.0 Network Bundle for the Mac (TOPS)

TOPS 3.0 provides a completer network/ E-Mail solution for any combination of Macs, IBM PC's and Sun workstations. With TOPS, every computer is a server and each user decides which files are public or private. TOPS follows AppleTalk File Protocol, so AFP-compatible multiuser applications will run properly. Includes TOPS Spool for background print-ing on the network, and a 20-user pack-age of InBox 3.0 (networking) \$189.

09.
09.
99.
05.
29.
89.

### MUSIC AND SOUND

50
59.
69.
65.



to the second se	
Coda	
Finale	569
MacDrums	
Perceive	49.
Electronic Arts	
Deluxe Music Construction 2.5	85.
Deluxe Recorder	99
Esthetic Engineering	
Music Mouse	40
	49.
Farallon Computing	
MacRecorder (records sound)	159.
Screen Recorder	125.
First Byte	
SmoothTalker	20
	32.
HIP Software	-
Harmony Grid	59.
Passport Designs	
NoteWriter	325.
Passport MIDI Interface	89
Primera Software	
Different Drummer	
	59.
Repertoire	
Music Publisher	359.

### FastLabel 2.0 (Vertical Solutions)

FastLabel 2.0 (Vertical Solutions)
Stick it to the chore of simple label printing! FastLabel offers a handy easy-to-use solution to creative label printing without the need to haul out cumbersome desktop publishing software. Import addresses, lists and graphics from other Mac applications then use Fastlabel's eighteen preformatted designs for create your own by matted designs (or create your own) to produce everything from disk, V.C.R and cassette labels to personalized envelopes, name badges, signs and more. (business) \$89.

MacTilt (Ergotron)
See eye to eye with your Mac and watch
productivity soar! Raise your Mac to eye
level using MacTilt's 4 inch pedestal. Then
tilt it up to 30 degrees and rotate it a full 360 degrees to make glare, eye, neck and back strain disappear like magic. (accessories) \$68.

Resonate	
Listen 2.0 62	2.
Tactic Software	
Sound Clips Vol. 1 or 2ea. 49	Э.

### SECURITY & VIRUS PROTECTION

ASD Software, Inc.	
FileGuard Extend (office 5-pak)	309
Fifth Generation	.000.
Disk Lock	107
HJC/Microcom	107
Virex 2.3	52
Kent Marsh	02.
MacSafe II	107
NightWatch	56.
Mainstay	
AntiToxin	59.
Symantec Corporation S. A. M.	68.

### SmartOne 2400 Modem (Best Data Products)

For beginners and experienced modern users. If you need a 2400 baud modem, the Smart One 2400 Modern provides an economical alternative. For less than the cost of some 1200 bps units, you get a Hayes compatible modem with auto answer/origi-nate, 300, 1200 and 2400 baud operation, pass-through phone jack, speaker with programmable volume,

and a manufacturer's two-year warranty.

All user options are stored in non-volatile memory. Includes software and cable. (modems) \$145.

### SPELLING/DICTIONARY THESAURUS CHECKERS

Deneba Software	
BigThesaurus	64
Spelling Coach Pro 3.1	125
Electronic Arts	
Thunder II	49
Lexpertise	
MacProof 3.2.1	115
Microlytics	
Electronic Word Finder	50
Word Finder 2.0	24
vvoid Finder 2.0	34
	-10
	THE RESERVE OF THE PERSON NAMED IN

Casino Master (Centron) Let it Ride! You can bet on having hours of fun with Casino Master's five exciting casino games. Includes Blackjack Ace, Crapsmaster, Rou-lette Master, Pokermaster and Baccarat Master. Exact table simulation, mouse controlled betting, selectable bankroll, stored win/lose statistics and complete manual included. Mac II version available in full color! An odds-on

favorite with professional gam-blers. (entertainment) Individual games **\$27. ea.** / 5 game Casino Master Package **\$49.** / Deluxe Mac II version



Sensible Software	
BookEnds	53.
Sensible Grammar	
STATISTICAL A	NALVEIS

OTTITION CHEFTING	21010
Abacus Concepts	
StatView II	279.
StatView SE+Graphics	179.
D2 Software	
MacSpin 2.0	189.
Wolfram Research	
Mathematica (SE)	450.

### UTILITIES

Abbott Systems	
CanOpener 1.1	64
Affinity	
Tempo II	99.
Aladdin Systems Inc.	
Programmer's Assistants	75.
Shortcut	46.
Stufflt Deluxe	63.
ALSoft	
DiskExpress II	57.
MultiDisk	49.
Master Juggler	64.
American Power Conversion	
Power Chute	74.
CE Software	
DiskTop 4.0 or QuicKeys 1.2	ea. 64.
Caere	
OmniPage	549.
	and the second second



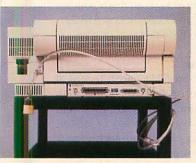
### CompuServe

ou can now contact MacWAREHOUSE or place orders with us in the **Electronic Mall** on CompuServe. The **MacWAREHOUSE GO code** is **GO MW**. As always, you'll get fast, dependable overnight service and you can leave messages for Kerry or any of our support staff.

TypeAlign (Emerald City Software)
Exclusively for ATM owners; give your

type a change of face with TypeAlign. Rotate, wrap, skew, and kern type, then add special effects like outlines and see it all on screen, instantly. Print on any ATM-supported printer, including ImageWriters, DeskWriters, and LaserWriters. Works with major word processing, desktop publishing and presentation programs and Adobe PostScript fonts. Also supports over 16 million colors. (fonts) \$60.

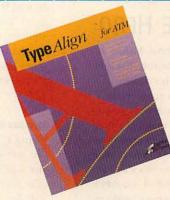
Central Point Software	
Copy II Mac	23
Mac Tools Deluxe	75
Custom Applications	
Freedom of Press 2.1a	259
Dantz Development	
Retrospect	149
Davna Communications	
Dayna Communications DOS Mounter	55
Emerald City Software	
Emerald City Software Lasertalk 1.0	149
Fifth Congration	
FastBack II	107
PowerStation 2.5	34
Pyro	22
Suitcase II	44
ICOM Simulations	
On Cue	35
Oll Odd	



Insight Development	
Insight Development MacPrint	95.
AutoSave II	29.
BackMatic	00.
POWERicons or POWERmenus ea 3	39.
Mainstay	
Capture 2.0	19.
Microlytics	
GOfer	15.
Olduvai	
ClipShare 13 MultiClip 5	39.
MultiClip	50.
ON Technology	
On Location	75.
Preferred Publishers	
Exposure	52.
Software Innovations	
HandOff	32.

Carbon Copy Mac (Microm)
Run the office from your easy chair! Carbon Copy Mac is the remote control software package that allows one Mac to remotely operate another Mac's peripherals, screen, keyboard and mouse. Works through LocalTalk LANS or modems. Transfer files without using EMAIL, access messages remotely, or "borrow" expensive peripherals such as CD-ROM drives and fax modems. Unparalleled tool for training demonstrations. Offers three levels of password security. Get a second node FREE through manufacturer's Special Introductory Offer. (communications)

CONTEST RULES 1, Entries must be received on or before 8/31/90. 2. Winner selected in random drawing by attorneys for MicroWarehouse Inc. (MWH), whose decisions are final. 3. Concorde trip to London and MacUser UK show subject to availability. MWH reserves the right to substitute wholesale cash value up to \$8000. 4. Winner responsible for taxes. 5. Odds of winning depend on number of entries. 6. MWH will announce the winner on or



SuperMac	
DiskFit 1.5 or SuperSpool 5.0 ea	a. 58.
Sentinel 2.2	87.
SuperLaserSpool 2.0 (single user)	87.
Super LaserSpool (5-pack)	289.
Symantec Corporation	
SÚM II	99.
Tactic Software	
FontShare 2.0	149.
Icon-It 2.0	39.
XTree Company	
XTree Mac	52.

LaserWriter II Security System (Kensington)

This complete security kit will make sure your LaserWriter II stays just where it belongs. It is easy to install - no equip-ment modifications required. All you need is a screwdriver. (accessories) \$32.

Apple Security System

Don't let your system roam from its home! The Apple Security system uses Apple's built in security slots and accompanying equipment/tool kit to secure your Apple IIGS, Mac, Mac Plus, Mac SE or Mac II. Installs in a snap. (accessories). \$34.

### WORD PROCESSORS & OUTLINERS

Claris	
MacWrite II	159.
Microsoft	
Word 4.0	249.
New Horizons Software	
WordMaker	65.
Symmetry	
Acta Advantage w/DA	65.
T/Maker	
WriteNow 2.0	119.
WordPerfect Corp.	
WordPerfect	229.
Working Software	-
QuickLetter	72.



around 9/30/90. Winner notified by mail. Dates subject to change at the discretion of MWH. If unable to contact winner, an alternate will be selected by random drawing. 7. Contest open to U.S. residents, except where prohibeted by law. Employees of MWH and suppliers not eligible. 8. Prize: one round trip ticket to London, including NYLORDON CONCORD. HOTEL accommodation for duration of MacUser UK Show, November 1990. \$500 cash for miscellaneous expenses.

Circle 78 on reader service card



Power User's Memory Upgrade

Unlock the awesome power in your Mac with a Power User's Memory Upgrade. By replacing the existing 256K chips with powerful 1MB memory modules you can upgrade your Plus or SE to 2,5MB or 4MB, or your Mac II type to 4 or 8MB

55:10 Z. 5MB of 4MB, or your Mac II type to 4 or 8MB. You III find installation quick and easy with the step-by-step instruction man-ual. You may need a simple tool kit for

Join the thousands of Mac users who are taking advantage of today's low memory prices. You'll never have to quit

your word processor just to answer a ques-tion from a spreadsheet again! Install a Power User's Memory Upgrade and working with your Mac will never be the same again. Call and we'll help you select the right Memory Upgrade for your Mac.

Price per 1MB-\$89\*

(For Mac Plus and SE models, upgrades must be installed in pairs. For the Mac II family, upgrades must be installed in groups

I'm Donna, call me at



### Have you seen these faces?

r

U

Z

c d

O

p

u

w

a

b

d

f

G

m

n

o

bc DefGhi Jk I

c d

> Unless you order type from Bitstream, you may not be able to find these faces:

### Compacta Bold

Lydian Italic
ITC Newtext

Amazone

Bitstream offers the largest type library for Macintosh.<sup>a</sup> driven typesetters and laser printers—over 1,000!

Send for a **free** Bitstream\* typeface catalog by circling the Reader Service number below. To order type, call Bitstream direct at **1-800-237-3335**.

Copy set in Bitstream Charter,\* available only from Bitstream.



BITSTREAM and BITSTREAM CHARTER are registered trademark of Bitstream Inc. ITC Newtext is a registered trademark of International Typeface Comperation. Lydian is a registered trademark of Kingaley-ATF Type Corporation. Macinton is a registered trademark of Apple Computer, Inc.

Circle 511 on reader service card.

### SERVICE HERO

eader Connie Mahan of Washington, D.C., has kind words for her dealer.

"I work for a nonprofit environmental organization, and it was a tough sell to get my boss to spring for the more expensive Mac line over IBM compatibles. I put an SE/30 in his office and ultimately prevailed. It wouldn't have flown, however, without some creative pricing from Cynthia Goldner at the Computer Factory in Silver Spring, Maryland. She has worked tirelessly to get us the best prices; solved our problems; given us equipment loaners when she couldn't solve them right away; and generally been cheerful, accessible, and accommodating."

ship old orders over the next 120 days. Jasmine hopes to return the 800 drives waiting for repair within the next 90 days.

Still waiting for a drive that you bought with a credit card? Your bank may be able to give you a credit. Customers who paid for orders they did not receive are secured creditors. By law, they will receive the full amount paid for a drive up to \$900, provided there are sufficient funds to pay them. If Jasmine closed down today, there might be very little for any creditor. But Bayer hopes to keep the company afloat long enough to fulfill most of the back orders. That would reduce the overall debt and make Jasmine more attractive to a buyer, who would provide money for remaining creditors. Jasmine is also negotiating with Rodime to settle lawsuits between the two. Rodime, a large creditor of Jasmine's, gave the company a \$110,000 loan in early April so Jasmine could make its payroll and continue independent operation.

Disk-drive maker Microtech International has an agreement with Toshiba America to honor the warranty of Jasmine drives containing Toshiba mechanisms and hopes to negotiate similar agreements with other vendors. (Opening a drive voids the warranty, so use SCSI Probe software, available from BMUG and other shareware sources, to discover the maker of the mechanism.) Microtech will repair other Jasmine drives for a fee. Contact Microtech at 203/468-6223 or 800/626-4276 for more information.

### **Attention Uptime Subscribers**

Viking Technologies, which published the subscription-based software service Uptime, filed for bankruptcy last year and in January sold its assets to Softdisk Publishing of Shreveport, Louisiana.

The company has taken over the Uptime subscriptions, sending up to six monthly disks to Uptime customers, depending on the number of disks left in their subscriptions. The disks contain original applications and magazine-like columns and departments. Any questions? You can reach Softdisk Publishing and Diskworld at 318/221-5134 or 800/831-2694.

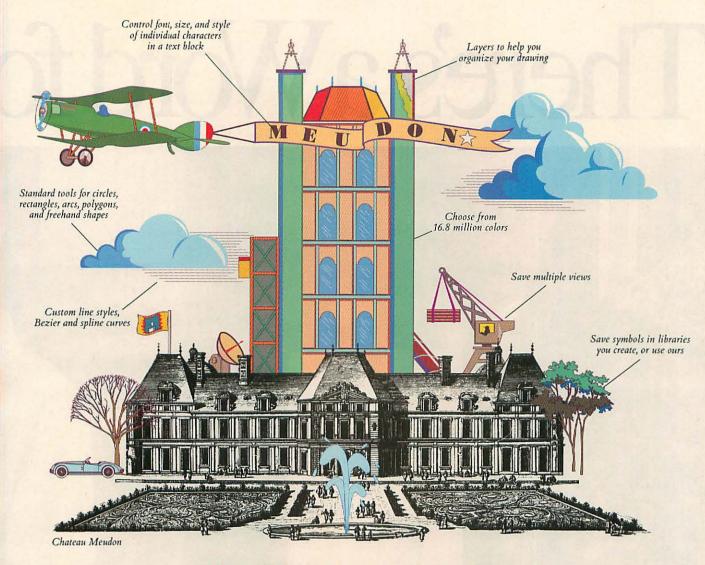
### Hacker Heaven

The Fifth Annual Macintosh Technical Conference, or MacHack '90, is scheduled for June 13 through 16 in Ann Arbor, Michigan. *Macworld* editor, conference chair, and technogeek Brita Meng urges programmers to use this sterling opportunity to meet other programmers. Don't miss the popular Apple-led Bash Apple session and the infamous Best Hack competition. Call Aimee Moran or Carol Lynn for more details at 313/882-1824.

### **Hard-Won Warranty**

Many thanks to Apple for recently changing its outmoded warranty policy and for offering owners of old Apple products the opportunity (through May 31) to buy six months of AppleCare and get six months free. And special thanks to the nearly 1500 readers who fought for a better warranty by writing letters and sending coupons to *Macworld* and Apple. Your voices made a difference.

Send nominees for sainthood to Service Heroes, *Macworld*, 501 Second St., San Francisco, CA 94107 or via AppleLink (Macworld1) or Connect (Branscum). Drop *Conspicuous Consumer* a line if a company is ignoring you. If your user group is sponsoring an event, please get in touch.



HOW TO UPGRADE A CLASSIC.

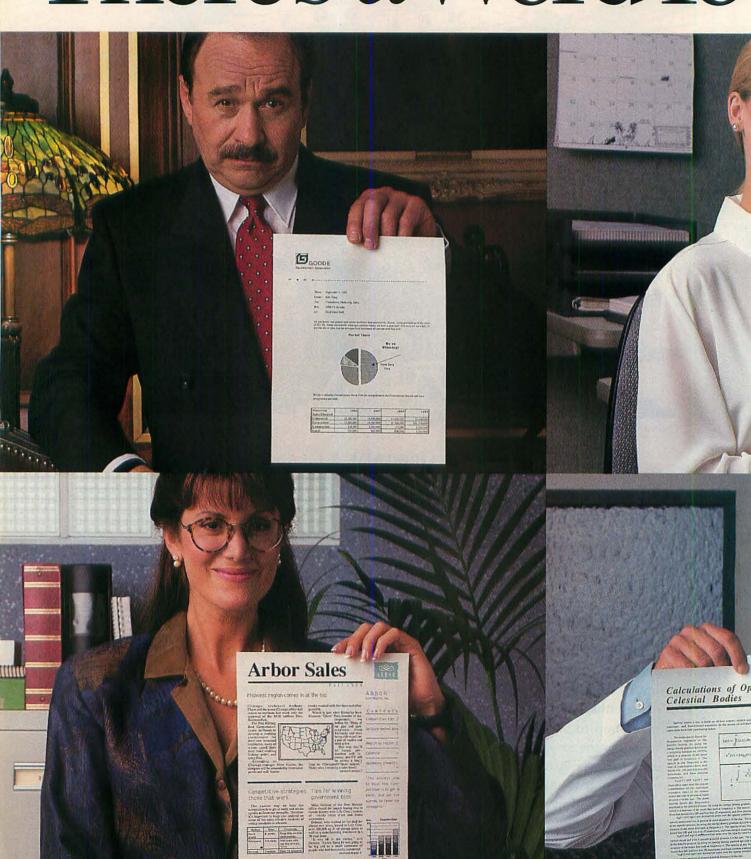
The original MacDraft\* is a classic precision drawing program in its own right. And now, we've upgraded it. Introducing MacDraft 2.0. As you can see, it gives you even more powerful precision drawing tools. Plus many enhanced features like object and text rotation in less than 1° increments, up to 32X zoom, and PostScript\*-quality printing. But we didn't change the easy-to-use interface that made the original MacDraft a favorite for over 70,000 users. If you'd like to experience MacDraft 2.0 for yourself, visit your nearest dealer. And see the classic drawing program that's way ahead of its time.



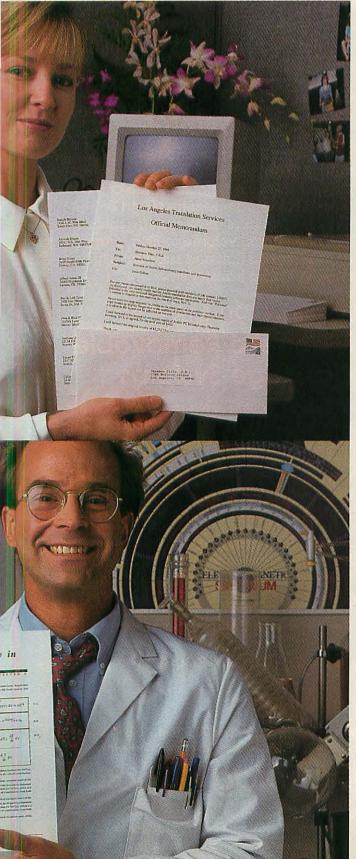
am MACDRAFT 2.0
DRAW ON THE POWER OF THE MAC

Demo Disks are available for \$9.95 shipping and handling. Innovative Data Design, Inc., 2280A Bates Ave., Concord, CA 94520, 415-680-6818 Copyright © 1990 Innovative Data Design, Inc. All rights reserved. Innovative Data Design, their logo, and MacDraft are registered trademarks of Innovative Data Design, Inc. PostScript is a registered trademark of Adobe Systems, Inc.

### There's a Word fo



### r people like you.



Whether you're a marketing maven on your way up, a scientist knee-deep in formulas, or a temp trying to cope with an unfamiliar corporate mindset, when it comes to putting thoughts to paper, Microsoft is the Word for you.

And our users aren't the only ones who think so. Recently, the editors of *Mac User* gave Microsoft® Word version 4.0 the highest rating of any Macintosh® word

processing program. Period.

A move we weren't altogether surprised by. You see, besides being perversely committed to research and development, we use a highly sophisticated approach to improving our product. We listen.



All of which has led to innovations like Word 4.0's powerful Table feature, enabling users to create side-by-side paragraphs, lists and even forms, without the hassle of dealing with tabs.

And since there *are* other word processing programs, Word 4.0 provides connectivity to Microsoft Word version 5.0 for the PC, PC WordPerfect, DCA and other file formats. So now you can share your work with

those less fortunate than yourself.

What's more, Word 4.0 is uniquely capable of delivering even more performance when it's used with other applications. For example, even highly educated executives can import Microsoft Excel tables and charts and automatically update them. Making it easy to ensure document accuracy. Plus, Microsoft Mail can be sent from within Word 4.0, significantly boosting workgroup productivity.

For something a tad more informative than this ad, call (800) 541-1261, Dept. J92, to receive a brochure or ask for the location of your nearest dealer for a demo. You'll find that no matter what type of word processing you're performing, you could be doing it better.

Just take our Word for it.

### Microsoft Making it all make sense

Customers inside the 50 United States, call (800) 541-1261, Dept. J92. In Canada, call (416) 673-7638. Outside the U.S. and Canada, call (206) 882-8661. © Copyright 1989 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and Making it all make sense is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. WordPerfect is a registered trademark of WordPerfect Corporation.

### Removable Data Storage



### 572 and 1124 MB Rewritable Optical Storage Systems

MicroNet offers single and twin drive magneto optical data storage systems that are designed around some of the most reliable components found on the market! Our dual drive system, spliced into one logical volume, cuts average access time in half and substantially improves data transfer time.

### 45 and 90 MB Magnetic Removable Cartridge Systems

Our single or twin drive removable data cartridge systems are developed around the ever popular SyQuest, 20 ms average access, winchester hard disk drives. They are excellent for securing sensitive data, backing up fixed hard disk drives and transporting data between computers.

All MicroNet products are sold through better dealers worldwide and they are backed by our full year factory warranty.

Individual data sheets and the name of the nearest authorized dealer on request.

"QUALITY YOU CAN COUNT ON"

We offer the finest in Internal and External Hard Disk Drive Systems from 20 MB to 2,022 MB, Tape Backup to 525 MB and 1.3 GB Digital Audio Tape for a Variety of Operating Systems.



### MicroNet Technology, Inc.

20 MASON • IRVINE, CA 92718 • TELEPHONE: (714) 837-6033

FAX: (714) 837-1164 • APPLELINK: D1656 • COMPUSERVE: 76004,1611 • CONNECT: MICRONET

Circle 3 on reader service card

### Programming for the Rest of Us

CAN SOFTWARE DEVELOPMENT ON THE MAC EVER BECOME MAINSTREAM?

BY BRUCE F. WEBSTER

t is ironic that the Macintosh—perhaps the easiest personal computer to use—is one of the toughest personal computers to program. It is also no surprise: the difficulty in programming is a direct consequence of the complexity of the

software supporting the Mac's user interface. But it does present a real barrier to Macintosh users who would like to create custom applications, develop commercial products, or write programs just for the fun of it.

Suppose you have lots of experience using the Mac, but you have done little (if any) Mac programming. Are there any tools to help you get through the initial learning curve? Is HyperCard (or, at least, HyperTalk) the best solution? Does graphical programming really exist on the Macintosh? And will object-oriented programming solve all your problems? Let's take a look at these questions and more.

### Can You Say C?

Let's start off by considering traditional, non-object-oriented programming languages: Pascal, C, BASIC, FORTRAN, Forth, Ada, and others. There are many such languages available for the Macintosh, but few are good choices for someone who's never programmed on the Mac before. That's because of the inherent difficulties-more than 500 toolbox routines, five volumes of Inside Macintosh to learn, and the significant amount of code needed just to fully implement the user interface. On top of that, if the language isn't Pascal, you have the challenge of hooking up with the Mac's Pascal-oriented toolbox interface.

Despite the burden that traditional languages place on Mac programmers, you should consider, or at least be aware of, some products that use traditional languages. Macintosh Programmer's Workshop (MPW), from Apple, is a large, professional development environment. It comes with thick manuals, lots of disks, and (ironically) an interface geared toward command-line interaction; it's not for the casual user. MPW's greatest strength is its modular approach: you buy the basic MPW development system, then add the tools you want. These include languages such as C, Pascal, C++, 680x0 assembler, Modula-2, Ada, FOR-TRAN, and more. (Some are available from Apple, others from third-party vendors.) While this all may sound great, MPW doesn't lend itself to introductory Mac programming. It's big, complex, slow at times, and obscure in places. That's not to say that you might not want to try it someday, but learn how to program the Mac first.

There are some traditional languages that provide solutions better suited for the masses. One example—two, really—is a pair of languages from Symantec: Think C and Think Pascal.

The two implementations offer similar features: fast compilation and linking; project management and source-level debugging, all in a highly integrated, Mac-style environment. These features alone have made both



products widely accepted in the Mac community. But their most recent enhancements—object-oriented extensions, a Mac class library, and (for Think Pascal) a class browser and support of MacApp—make these products all the more useful to programmers new to the Mac environment. I'll talk more about why later on.

If you do choose MPW or one of the Think languages, you might want to buy a programming aid. Several companies market source-code libraries or linkable modules that implement aspects of the Mac user interface or provide functionality that you might need. Examples of the former include MacInterface, from Holder, Egan & Company, and Professional Programmer's Extender, from Invention Software. These packages give you the source code required to build a basic Macintosh application; you can then focus on adding functionality. A different approach is taken by FaceWare, which markets a set of code modules called FaceWare Pack that provide key functionality (user interface, text editing, graphic windows, and so on) and (continues)



### New 24-bit color from E-Machines.™

### Let your creativity take wing!

Experience a few minutes piloting the new 24-bit color T19/24: the latest addition to the E-Machines<sup>™</sup> fleet of high-flying Macintosh displays. From our exceptional color to our wide-screen gray scale displays, you'll see the big difference that comes from E-Magination.

♦ You'll see the difference in the large-screen image definition and brilliant color of the T19/24, whose 24-bits of true color lets you create and enhance true photographic quality images with smooth, rich, infinite gradations of tone.

You'll see the difference in the ColorPage™
T16: the perfect combination of compact size and bigscreen impact, judged best by no less an authority than
MacUser LABS.

And if you think that all 21-inch gray scale displays are pretty much the same—at least the same *size*—you'll see a big difference in the QuickView™ Z21 IQ.

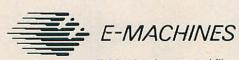


It's the only 21-inch screen large enough for two full pages, *including* margins and borders. Its

flicker-free screen and other advanced ergonomics are a pleasure to use.

So go ahead: let your creativity take wing. With E-Machines, you can take on those projects that have got to look great!

Put E-Magination to work for you. Just call us direct for your nearest dealer: 1-800-34 GRAPHIC (1-800-344-7274). Or write E-Machines, at 9305 SW Gemini Drive, Beaverton, OR 97005.



E-Magination at work™

can be used with several different C, Pascal, and FORTRAN compilers for the Mac. In both cases, the idea is the same: to cut down on the difficulty of Mac development by letting someone else do all the initial hard work.

Even with help, traditional languages are still the most difficult way to go in Mac development. You'll almost certainly need to purchase Apple's development bible, *Inside Macintosh* (Addison-Wesley 1985–1988), and there are other books you may want to get as well.

### **Building Bridges**

Since designing and creating the user interface is one of the most time-consuming tasks in Macintosh programming, new utilities such as AppMaker and Prototyper that substantially streamline the process are a boon for novices. Not only do they free up a programmer's time, but they also allow nonprogrammers to tackle what ordinarily would be a formidable task.

AppMaker and Prototyper both

use the same approach. First, you lay out the user interface—windows, dialog boxes, menus, buttons, text fields, controls, and so on—using an interactive environment, so that you can see just how everything will look. Once you're satisfied, you can generate C or Pascal source code, which you then use within the program you're writing. (These tools presume that you're using an existing compiler, such as MPW or one of the Think languages.)

### **Hyping HyperCard**

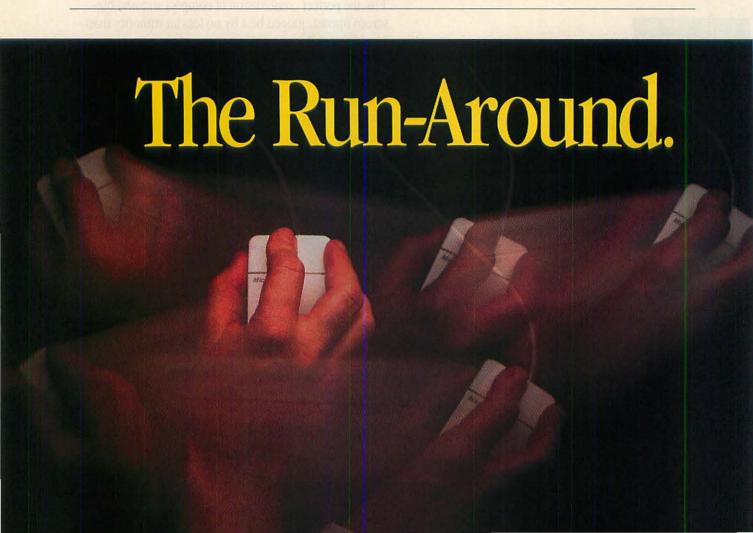
HyperCard was Apple's first real attempt to bring Macintosh programming to the rest of us. A simple yet deep programming environment that is given away with every System, HyperCard has led to hundreds of public domain and shareware programs, or stacks, some of which are impressive in their functionality and complexity. A number of add-on and utility programs for HyperCard (libraries and editors, for example) have come to market, and HyperCard has even in-

spired the more powerful SuperCard from Silicon Beach Software.

However, HyperCard has not led to a revolution in Mac software development for the masses. The HyperCard interface is so different from the standard Mac interface that many would-be programmers and users have a hard time treating stacks as serious or normal applications. And there are other limitations—such as lack of color support—yet to be addressed by Apple. If more aggressive support and development doesn't materialize, then HyperCard will probably start a long, slow decline as a useful tool for enduser development.

### **Programming with Pictures**

Several development environments have appeared that allow you to build programs graphically. One of the first was V.I.P. (Visually Interactive Programming) from Mainstay. Put simply, V.I.P. lets you lay out a program's flow. You create boxes that define values, make tests, carry out functions, then



connect them to indicate the path(s) of execution. The biggest problem with V.I.P. is bandwidth: there's a real limit to how much of a program you can see on the screen at one time. This is true for any programming environment, graphical or not, but V.I.P.'s flowchartlike format is especially "verbose" in a visual sense.

More effective is Serius89, from Serius, which bills itself (in a fit of hyperbole) as "the world's first desktop programming tool." Serius89 is designed to let nonprogrammers build complete applications. To do this, you build a list of objects-menus, windows, buttons, pictures, numbers, text-and define their attributes and relationships. Then you can select from a large number of functions (organized according to object type), define when and how those functions are used, and determine what objects they will act upon. Having set everything up, you can then have Serius89 "compile" your program design into a separate, stand-alone application. Al-

table with Mac SE and Mac H. MicroTouch

Dealers circle 426 on reader service card.

though it sounds complicated, the interface is quite easy to learn and use. After working through the tutorial, I went back and built a very simple text editor in a matter of minutes—without programming.

For the nonprogrammer, the Serius89 environment is limited by the objects and functions that are already defined. (Serius does make a developer's version of Serius89 that allows programmers to create new objects and functions, and Serius hopes to make these objects and functions available to its user base.) But unless you have a source for such objects and functions, you may find Serius89 too limiting.

#### **Objective Opinions**

Now we get to the current panacea: object-oriented programming (OOP). OOP has been touted heavily for the last year or two in the microcomputer marketplace, and the phrase *object-oriented* is being heavily abused (much like oat bran in the food mar-

ketplace). This is not to say that the benefits of OOP are not real, but it does mean that calling something object-oriented doesn't guarantee those benefits, any more than sticking oat bran into a candy bar ensures that the candy bar will be good for you.

Briefly and all too simply put, object-oriented programming involves treating a program you build as a collection of objects, individual entities that hold information and send messages to one another. These objects have a taxonomy, that is, they are instances (actual copies) of a particular class (type) of object. Thus, you might have a general Window class that knows how to draw a window; how to resize it, move it, or close it; how and when to redraw its contents; and so on. When your program runs, it may create several instances of the Window class-actual windowswhich then already know how to behave. If you need a custom type of window, then you create a subclass of (continues)

> 55 Jonspin Road / Wilmington, MA 01887 508 694 9900 / FAX 508 694 9980

End users circle 449 on reader service card.





Circle 58 on reader service card.

the Window class and modify its behavior appropriately.

Why might an object-oriented approach to programming the Mac make things easier? Because you typically have a class library, that is, a hierarchy of classes of objects that implement the Mac user interface. Thus, you already have classes defined for event loops, windows, dialog boxes, menus, buttons, scroll bars, text, and so on. You can then create instances of these objects in your program and use them without having to know how to correctly implement their behavior. Note that this approach is very similar in purpose to some of the products discussed earlier (MacInterface, Professional Programmer's Extender, and FaceWare Pack).

This doesn't mean that an OOP language is inherently easier to learn than traditional programming. Consider Smalltalk/V Mac from Digitalk. This is a pure, classical object-oriented language in a rich development environment available on several platforms. It comes with excellent documentation, including a well-written tutorial. Some people take very quickly to Smalltalk; there are cases cited of children programming merrily in Smalltalk after only a few days of instruction. Of course, there are also children who play the violin at age four. Other people find themselves going in circles, trying to grasp mutually dependent concepts and being unable to gain a grip anywhere.

A more conventional approach involves using an object-oriented version of an existing language. The MPW Pascal compiler has had object-oriented extensions for some time, and an MPW C++ compiler is now available. And as I mentioned earlier, Symantec has added object-oriented extensions to Think C and Think Pascal. All these efforts provide object-oriented programming in the context of an existing procedural language.

But the object-oriented extensions aren't enough to make the task easier; you need a good class library. Apple has had one for years—MacApp. However, upper-level management at Apple did little to support its development or promote its use until about a year and a half ago. Not surprisingly, that coincided with the announcement

of the Next system, with its much ballyhooed (and rightly so) object-oriented development system. Once that happened, high-level Apple execs got religion about OOP, finally catching on to what others within Apple had been saying for years.

Of course, since MacApp is designed to be used within MPW, there are other barriers to overcome. As one developer of programming tools for the Mac put it, Apple has managed to replace one tough learning curve with another. Luckily, Symantec provides its own class library—the Think Class Library—for use with the latest versions of Think C and Think Pascal; the latter also supports MacApp directly.

#### A Hybrid Future?

Over the past two years, we've seen a new wave of Macintosh development tools that make it easier to create a development system to fit individual needs, tastes, and backgrounds. For example, a user with experience programming on non-Mac systems might put together AppMaker or Prototyper, Think C, and maybe some of the Face-Ware modules. Someone with no programming experience at all might be better off staying with HyperCard or looking at something like Serius89.

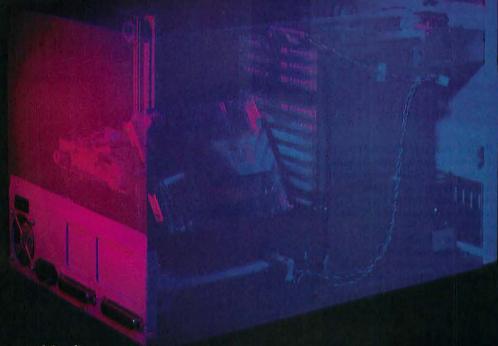
The ultimate solution is not here yet. And I'm not sure what it will be. It might be a cross between HyperCard, Serius89, Prototyper, and FaceWare—a development environment in which you build a Mac interface, establish connections between the elements, use a simple yet powerful scripting language to define behavior, and drop in prefabricated software modules to add functionality. All the individual components exist, and they do seem to be roughly headed in the same direction, but that degree of system integration can only come from Apple.

Programming the Mac may never be as easy as using one, but we can hope. We can always hope.

See Where to Buy for contact information.

Contributing editor Bruce F. Webster is project manager at San Diego-based LaserGo. He can be reached via BIX (bwebster) and via MCI Mail (Bruce Webster).

### Look Into The Future.



The world's first 6.5 gigabyte Erasable Optical Desktop Storage System

Made In USA

Someday in the future all your data will be stored on optical disks, forever. At Pinnacle Micro... someday is today.

The new REO-6500" is the perfect solution for data intensive workgroups, providing a central data access base.

The REO-6500" is a compact desktop jukebox with a robotic mechanism that shuttles up to ten optical disks. It's a storage powerhouse delivering fast reliable file access on command.

Pinnacle software gives you the ability to span your data across multiple disks to create a single 6.5 gigabyte continuous volume.

At \$9,995, the REO-6500° is another important first for Pinnacle Micro, the Optical Storage Leader.

Interface kits are available for MAC, SUN, DEC, IBM and compatibles from \$995.

The Pinnacle ASCENT" program provides an upgrade path option for REO-650" owners, for \$6,995.

Invest in your data's future with the Optical Storage leader, call today for the name of your nearest authorized dealer.

**(**800) 553-7070



12"W x 12" H x 18.75" D

PINNACLE

**ICRO** 

### Mac Avenue

A Division of CompuAdd Corporation

### our New Mail-Order

Our name is MacAvenue and that means the best buy on Macintosh products • •

Call 800-388-6221

and have your order shipped. . . . . . .

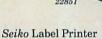
### ··· Printers

First Adobe Postscript Laser Printer For Under \$2500

The TI microLaser PS is a truly remarkable Macintoshcompatible PostScript printer. Compact, user-friendly, upgradeable and affordable, its standard features can be enhanced to print any application with style.

Features a complete package of Adobe Post-Script and HP LaserJet Series II emulations. Prints at 300x300dpi and sports 35 built-in PostScript fonts. Fits neatly on your desk; 250-sheet paper drawer slides completely into the machine. The standard 1.5MB RAM is easily upgradeable to 4MB. LocalTalk-ready and compatible with the Centronics parallel interface.

TI microLaser PS with LocalTalk 22851 —



22852 — \$195 Epson LX-810 9-pin printer 56303 — \$199 Epson LQ-2550 24-pin printer 56339 — \$999 Epson LQ-510 24-pin printer 56340 — \$349 Orange Micro Grappler LX 22853 — \$136



Why Buy From Mac Avenue

That's easy. Price. Service. Personality.

And MacAvenue's Stress-Free Guarantee! Love us or your money back!

### 30-Day Money-Back Guarantee

No questions asked. Every product MacAvenue sells will give complete satisfaction. If not, return it in the original packaging within 30 days of purchase. We'll refund your money or we'll pay the return freight, replace the product with new merchandise, and pay the freight back to you.

Toll-Free Technical Support • 90-Day Product Replacement
Should you experience a problem with anything you purchase from MacAvenue, call
our product support staff at 800-766-6221 weekdays from 8:00am to 7:00pm, CST.

We will be happy to assist you with any hardware or software difficulty. If we
cannot resolve the problem over the phone, we'll assign you a return material
authorization (RMA) number and a Federal Express number. We will replace the
product with equivalent merchandise and pay the shipping both ways.

One-Year Limited Warranty

For up to one full year after your purchase, MacAvenue will replace or repair (at our option and without cost to you) any product you are not completely satisfied with, and we will pay for return freight to you.



24-Bit Color System Under \$1300!

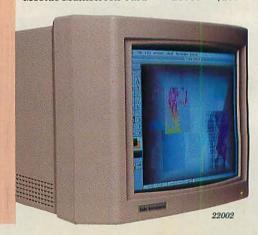
When you combine the Seiko 14-inch color monitor and the RasterOps Color Board 264, what you get are BRIGHT COLORS. 43% brighter than the Apple solution. And a picture that is sharp all the way to the edges. Sony Trinitron technology paired with RasterOps 24-bit color technology gives you better color than you've hoped for, specially bundled at only:

22001 - \$1295

22002-\$595

E-Machines T-16 color monitor system 22003 - \$3199 E-Machines T-19 22004-\$4665 color monitor system Sigma PageView 15" systems 22100-\$1050 Mac II 22101-\$999 SE 22106-\$1050 SE/30 Sigma SilverView 21" systems Mac II 22104-\$1599 22107-\$1599 SE/30 22103-\$1599 Mobius Multiscreen Card 23530-\$295

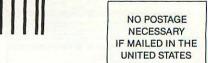
Seiko 14" color monitor







**Save \$23.40** 



### **BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

### **MACWORLD**

Subscription Department P.O. Box 51666 Boulder, CO 80321-1666



### Best Price,

### Memory/Boards



MacAvenue	25481 25480
2x1MB SIMM Kit, 80ns	25480-\$ call
4x1MB SIMM Kit, 80ns	25482—\$ call
4x4MB SIMM Kit, 80ns	25481 — \$ call
DayStar	
030 25MHz II	23632-\$1149
030 33MHz II	23633 - \$1539
030 40MHz II	23638-\$1919
030 50MHz II	23639 - \$2309
030 25MHz Hex	23640-\$1149
030 33MHz IIcx	23641-\$1539
030 40MHz IIcx	23642-\$1919
030 50MHz IIcx	23643 - \$2309
030 25MHz IIx	23644-\$1149
030 33MHz IIx	23645 - \$1539
030 40MHz IIx	23646-\$1919
030 50MHz IIx	23647-\$2309
IIci Cache card	23634-\$754
Dove 33MHz SE/30 Board	23636 - \$965
Dove SE 020 w/881 & 1MB	23637-\$875

### **Data Storage**

Get Lightning Speed With A Laser

### Media

10mega Bernoulli Cartrid	ge,
3 Pack	57805-\$199
Sony 3.5" Diskettes	
800KB, 10 Pack	57401-\$14
1.44MB, 10 Pack	57440-\$25

### Tape Drives

'ecmar	
QT-40 40MB Tape System	23830-\$950
QT-80 80MB Tape System	23831-\$1225
QT-40 Cable Kit	24931-\$106
QT-Mac Data Cartridge	26080\$85

### **Drives**

Kennect

2.4 Diskette Drive 24730 — \$325 2.4 800KB Rapport 24930 — \$195 Laser 800KB Diskette Drive 24734 — \$175 DaynaFile

5.25" 1.2MB Diskette Drive 24732— \$550 5.25" 360K/1.2MB

Diskette Drive 24733 — \$725



### Best Service,

### Accessories

MacAvenue Carrying Case 26898—\$65 We carry most Kensington accessories—call for current prices!

### **Input Devices**



25282

### Keyboards

DataDesk Mac-101	
Keyboard, ADB	25180-\$129
DataDesk Mac-101	
Keyboard, beige	25181 - \$129

### Mice

Kensington	
Turbo Mouse Plus	25280-\$107
Turbo Mouse ADB	25281-\$107
Mobius Cordless Mouse	25282-\$95

### Scanners

Logitech ScanMan 32	22751-\$320
Complete PC	
Halfpage Scanner	22752 - \$313
Page Scanner	22753 - \$758
Thunderware	
ThunderScan 5.0	22754 - \$176
Microtek	
300Z Color Scanner	22755-\$2150
MS-II B&W Scanner	<i>22756</i> —\$1080
1997	

#### Sound

Doulla	
Farallon MacRecorder	23730-\$162
Aapps MicroTV	23731 - \$265
Passport MIDI Interface	23732 - \$76

### Et Cetera

Summagraphics Bit Pad Plus	26885-	-\$318
DataDesk HyperDialer	26886-	

### Connectors

MacAvenue

Mac128/512 to Hayes 26281 — \$25 Mac128/512 to Imagewriter, 6 ft

26282 — \$25 MacPlus Peripheral Adapter, 6 ft

MacPlus Peripheral Adapter, 6 ft. 26283 — \$25 Mac to Haves-compatible

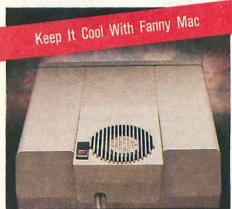
	modem, 6 ft.	26285-
	Mac to Imagewriter, 6 ft.	26286-
	Mac to Imagewriter II, 6 ft.	26287-
	SCSI Extension Cable, 6 ft.	26288-
	SCSI Peripheral Cable, 2 ft.	26289-
	SCSI System Cable, 6 ft.	26290-
	SCSI Peripheral Cable, 6 ft.	26291 -
	SCSI System Cable, 2 ft.	26280-
1	Kensington Extra Long ADB	26900-
1	Kensington A/B Box (Din 8)	26890-

### Electronics

Mobius Fanny Mac

26880-\$55

\$25 \$25 \$35 \$35 \$9 \$24



 American Power Conversion
 Uninterruptible supply
 26292—\$275

 Kensington
 26888—\$62

 System Saver, beige
 26889—\$62

 System Saver, platinum
 26889—\$62

 Tripp Lite Surge Suppressor
 40508—\$68.9



A Division of CompuAdd Corporation

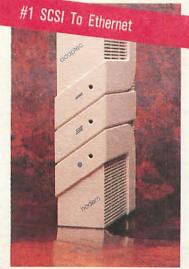
Order Toll-Free Today! 800-388-6221

### Source For Macintosh Products

### .....NOW!

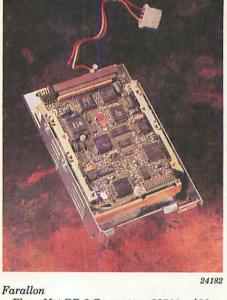
overnight for \$2!

### Network



22500	
Adaptec Nodem THICK	22500-\$395
Adaptec Nodem THIN	22527-\$395
Asanti	
MacCon IIE	22524-\$395
MacCon SE THICK	22525 - \$295
MacCon SE/30 THICK	22526-\$395
MacCon IIE Twisted Pa	ir 22529—\$395
MacCon SE/30E THIN	22530-\$395
MacCon SE/30E	
Twisted Pair	22531-\$395
MacCon SE Twisted Pa	ir 22532—\$295
MacCon SE THIN	22533 - \$295
Dove Fastnet SE	
Ethernet card	22501-\$353
Dove Fastnet III	

22505



	24182
Farallon	
PhoneNet DB-9 Connector	22511—\$28
PhoneNet Star Connector	22512-\$18
PhoneNet Din-8 Connector	22513-\$31
PhoneNet to LocalTalk	
Adapter	<i>22514</i> —\$31
PhoneNet Star Connector,	
10 Pack	<i>22515</i> —\$138
PhoneNet Star Controller	<i>22516</i> —\$888
PhoneNet Repeater	22517-\$313
Star Wiring Kit Harmonica	22518-\$64
Portable Pack	22519-\$373
Hayes Interbridge	22509 - \$639
Kinetics FastPath 4 Gateway	22510-\$1935
MacAvenue	
LocalTalk DB-9 Connector	22520-\$32
LocalTalk Din-8 Connector	22521-\$32
Phone DB-9 Connector	22522-\$23
Phone Din-8 Connector	22523-\$23
Shiva	- A Committee - Co
NetSerial X232	22504-\$275
NetBridge	22505-\$339
TeleBridge	22506-\$339
NetModem V2400	22507-\$435
Ethergate	22508-\$1825
NetModem V.32 9600 baud	22528-\$1289
Tops Flashbox	22503-\$108



22504

22508

### **Hard Drives**

### CompuAdd High Performance Drives

High performance, low profile, and minimum power demands. What more can you ask from a hard drive? With features like automatic error correction, high shock resistance, SCSI controller and internal air filtration system, CompuAdd internal hard drive kits sport components that perform to the most demanding expectations. Ready to run, complete with Apple System and a CompuAdd formatter utility that takes care of drive formatting, partitioning and diagnostics.

### CompuAdd Internal Drives

20MB HD - SE	24180 - \$325
40MB HD - SE	24181-\$425
80MB HD - SE	24182-\$600
100MB HD - SE	24183-\$700
20MB HD - Mac II	24184-\$325
40MB HD - Mac II	24185-\$425
80MB HD - Mac II	24186-\$600
100MB HD - Mac II	24187-\$700
Omega Portable 44MB HD	24385-\$1850

 Cutting Edge
 External Drives

 20MB HD System
 24386 — \$359

 45MB HD System
 24387 — \$489

 80MB HD System
 24387 — \$489

80MB HD System 24388—\$649 100MB HD System 24389—\$899 MacAvenue offers you the best

brandname products. The best service. The best and friendliest product support. And — most important — the best price

anywhere. Everything at MacAvenue is designed to get you the affordable, reliable Macintosh products you want when you want them.

Take a look at the amenities we offer:

- Orders placed by 8:00pm, CST, weekdays for "in stock" items ship the same day (barring system failure) with \$2 overnight delivery.
- VISA, MasterCard and American Express accepted. No surcharge.
- COD orders accepted maximum 2 days shipping. (Add \$6 including shipping.) Cash, money orders and bank checks on US funds also accepted.
- Purchase orders accepted on a net terms basis with approved credit (minimum \$500 initial purchase, thereafter \$50).
- MacAvenue ships anywhere in the free world by the quickest and least expensive method possible.
- Call for details on special order capabili-

### CALL TODAY!

8:00am to 9:00pm CST, M-F 9:00am to 5:00pm CST, Sat.

800-388-6221

### And Best Guarantee Around!

### Software

### **Word Processing**

Microsoft Works	30580-\$177
Microsoft Word	30582 - \$245
Microsoft Write	30584-\$77
WriteNow	30588-\$107
WordPerfect Mac	30590-\$183
Spellswell	30596—\$44
Symantec More II	30604-\$243
OmniPage 2.0	30610—\$545

#### Database

Ashton-Tate dBASE Mac	27800-	-\$292
Ashton-Tate dBASE Runtime	27802-	-\$569
DataDesk Prof. 3.0	27818-	-\$286
Microsoft File	27798-	-\$123

### Programming

Symantec THINK C	27586-	-\$149
Microsoft QuickBASIC	27590-	-\$64

### Office Programs

BulkMailer 3.3	27812-\$76
BulkMailer Plus	27814-\$187
Microsoft Office Bundle	30182-\$525
Microsoft Excel	30180-\$245
ProVue Panorama	27808-\$197

### Play It Again, SAM (And Sum)



### Utilities

Symantec Sum II	30340-\$92
Symantec SAM	30342-\$63
XTree Mac	30344-\$50
CanOpener	30348-\$63
QuickKeys	30356-\$62
Copy II Mac	30362-\$20
MacSafe II	30370-\$85
Suitcase II	30402-\$43
DiskLock	30406-\$106
On Cue	30408-\$35
Virex	30412-\$51
Complete Undelete	30420-\$36
After Dark	30424-\$24
101 Scripts & Buttons	30426—\$35
MacPrint 1.1	30428-\$74
OnLocation	30434 - \$75

#### Communications

Huyes SmartCom II	27002 — po4
Farallon Timbuktu 3.0	27666—\$95
Farallon Timbuktu Remote	27668-\$123
Microsoft Mail-Workstation	27676—\$83
Microsoft Mail-Server	27678-\$246
Microsoft Mail-20 Pack	27680-\$965
Tops for the Macintosh	27682-\$188
Microcom Carbon Copy Mac	27708-\$119

### **Money Management**

Insight	
Accounts Payable	28440-\$395
Accounts Receivable	28442-\$395
General Ledger	28444-\$395
Inventory	28446-\$395
Payroll	28448-\$395
Time Bill	28450-\$395
At Once	28454-\$283
Quicken	28458-\$35
Checkwriter	28468-\$35
DAC Easy Light MAC	28474-\$41



### Publishing/Presentation

Aldus PageMaker	29780-\$383
Aldus Persuasion	29782-\$337
Letraset ImageStudio	29790-\$273
Letraset Ready-Set-Go	29792-\$273
Adobe TypeManager	29824-\$55
Adobe TypeAlign	29826-\$58

### **Design Graphics**

Videoworks II	29208-\$172
Videoworks II Hypercard	29210-\$60
Videoworks II Accelerator	29212-\$99
SuperPaint	29222-\$124
Digital Darkroom	29224-\$248
PixelPaint	29228-\$223
PixelPaint Professional	29230-\$393
Cricket Draw	29234-\$136
Adobe Photoshop	29266-\$525

#### Education

27958-\$17
27962-\$57
27964-\$57
27966—\$57

Math Blaster Mystery Reader Rabbit **Typing Tutor** 

27970—\$25 28000—\$30 28008-\$28



### Games

28604-\$18
28606-\$18
28608-\$21
28650-\$21
28658-\$31
28660-\$31
28670-\$25
28672-\$26
28674-\$26
28676-\$26
28680-\$47
28684-\$31
28692-\$26
28700-\$40
28702-\$31
28714-\$23
28734-\$23



Call us toll-free TODAY to place your order. 800-888-6221

Request a copy of MacAvenue's premier 24page catalog. We're available from 8am to 9pm, CST, Monday-Friday, and Saturday, 9am to 5pm, CST, so CALL NOW!

90-day no-cost product replacement • \$2 Overnight delivery • Expert toll-free product support . Full one-year limited warranties on all products • If you don't see what you want call toll-free:

800-388-6221 To order by fax call:



12303 Technology Boulevard, Austin, TX 78727

Key Code

A Division of CompuAdd Corporation 9506

MacAvenue is a trademark and CompuAdd is a registered trademark of CompuAdd Corporation. Mac, Macintosh, Hypercard and Apple are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective companies. All return items must be accompanied by a return merchandise authorization (RMA) number. Prices and product descriptions are subject to change without notice. Neither CompuAdd nor MacAvenue is liable for damage due to omissions or typographical errors

# Sure beats sneakers.



One of the oldest file transfer methods known to Mac is about to become obsolete. You can now forget about using your "sneaker network" to run disks and files between computers around the office.

Introducing LapLink Mac III, the fastest, easiest way to transfer files between Macs or between a Mac and a PC.

LapLink Mac III is very versatile and lets you move files at speeds of nearly 3 megabytes per minute.

That's fast. And it's also easy, thanks to a simple interface familiar to anyone who uses a Mac. Just select the files you want to transfer and click on the copy button.

The new LapLink Mac III comes in two versions. The **Connectivity Pac** gives you everything you need to transfer files between two Macs or a Mac and a PC. You get a universal cable that connects a Mac to a PC or to another Mac. An accelerator that boosts Mac-to-Mac file transfer speeds to up to 750,000 baud. File translators

that make it simple to convert word processing documents from Mac formats to PC formats—or vice versa. And the ability to transfer files between two users over your existing AppleTalk cables or remotely over a modem. All for just \$189.95°.

The LapLink Mac III **Network Pac** lets you transfer files between five Macs on an AppleTalk network—without a dedicated file server or expensive hardware. Adding more users is as simple as buying more Network Pacs. And the Network Pac's suggested retail price of **\$299.95** works out to just **\$60 per user**. Not bad for a package that includes three-level password protection and remote modem access.

For more information, including a LapLink Mac III brochure, call us at **(800) 662-2652**, extension **202**.

After all, why run your files around when you can use your computer?



\*Manufacturer's suggested retail price
Dispright 1993, Traveling Statuser, in: Laguist Jupinsk Max, and Taveling Schware are rejudered traderials and Laguist Aux. Accelerator, Commod vely Fica and Max and accelerator of Defendence of Agoin Commoder, for an analysis of Commoderator of Agoin Commoder, for an analysis of Commoderator of Agoin Commoderator of Agoin Commoderator of Commoderator of Agoin Commoderator of Commoderator of Commoderator of Agoin Commoderator of Commoderator of Agoin Commoderator of Commoderator of

Traveling Software



### MACWORLD NEWS

by Dan Littman and Tom Moran

### Macs Go Live with Radio Net



Does sending Mac electronic mail by radio sound farfetched? If Apple's Apple

Complex Systems (ACS) group has its way, you'll be able to do just that. Written by two members of ACS, Ken Landau and Ricardo Batista, MacKDT is an E-mail and telecommunications program that sends and receives messages over the ARDIS (Advanced Radio Data Information Service) radio network. Developed at ARDIS's request and demonstrated initially at ARDIS's introduction, the program runs in the background under Multi-Finder and works much like AppleLink. The only difference is that it uses radio waves instead of telephone wires to transmit and receive data.

MacKDT is named after Motorola's hand-held wireless terminal, the KDT-840, which includes the RF (radio frequency) modem necessary to access the ARDIS network. A joint venture between IBM and Motorola, the network allows data terminals or computers with special RF modems to access remote host computers via wireless radio links. IBM has been using its own nationwide private radio system to support its 18,000 field service technicians for six years. Motorola, meanwhile, offered a radio-based commercial data communications network in Chicago, Los Angeles, and New York.

When the ARDIS network goes online in early April, it will contain more than 1100 radio base stations and will provide service to more than 8000 cities and towns in 50 states. Initially, the ARDIS network will operate at 4.8 kilobits per second; future plans



Ricardo Batista (left) and Ken Landau of Apple developed MacKDT, an electronic-mail solution that sends data over the ARDIS radio network created by IBM and Motorola.

call for data rates to reach 19.2 kbps as the network expands.

According to ARDIS, the radio network will offer traveling workers a way to access corporate databases, perform data entry, and exchange Email that's better than modems using cellular phone technology. Perhaps most importantly, ARDIS uses 800- or 900-MHz radio bands that work indoors as well as outdoors.

MacKDT is a prototype application at present, but Apple is currently working on ways to incorporate the Motorola RF modem into Macs, most notably the Macintosh Portable. Landau believes the Mac Portable, MacKDT, and radio modem will prove to be a winning combination not only for Apple, but also for large businesses that need Mac-based wireless communications capabilities.

For example, MacKDT could be offered to corporate customers through Apple's Complex Support Group as one part of the answer to the customer support, installation, and *(continues)* 

107

# FASTBACK: BY POPULAR DEMAND

(Now available on tape.)



service puzzle. Police and fire departments could also benefit by constantly receiving information from remote locations. For more information, contact ARDIS at 708/913-1215 and Apple at 408/996-1010.—**Brita Meng** 

### Under topCAD, a Language

Å

The Hungarian company Graphisoft is known in this country for ArchiCAD, but in

Europe it is also known for the highend 2-D mechanical-design package topCAD, and Graphisoft plans to market topCAD aggressively here beginning next year. topCAD, which was originally developed for VAXs and IBM mainframes, features a C-like programming environment with watch-me capability. Engineers can design mechanical objects such as cylinders, pistons, and valves while topCAD records them as macros in an editable command language. The objects can then be reused in a complex design such as an engine. You can create menus and

The Edit Modify Define Control Diew Attributes Query Symbol Move Repeat

C1: Folder: Cambio

C2: Folder: Cambio

C3: Folder: Cambio

C3: Folder: Cambio

C3: Folder: Cambio

C3: Folder: Cambio

C4: Folder: Cambio

C5: Folder: Cambio

C6: Folder: Cambio

C6: Folder: Cambio

C7: Folder: Cambio

C7: Folder: C

topCAD's Prompt Window suggests the next action. Each icon in the row across the top represents a command.

assign macros to them as menu items, and a floating Prompt Window, besides suggesting the next appropriate action, has a miniature icon bar (similar to Icon-It) for attaching macros to icons. (A pixel-editor window is available for drawing icons.)

In a programmer's hands, topCAD can double as a CAD-application generator. The language has about 500 commands, and programmers who bump up against its limits when designing new tools (or making Toolbox calls) can use routines written in FOR-

TRAN, C, or Pascal. For example, an end user might call an object such as a gear from the macro library and a topCAD application could use the Prompt Window, a dialog box, or a pop-up menu to request parameters, such as how many teeth to give the gears.

topCAD's 110 tools are contextsensitive. For example, when you select the circle tool, a second level of tools appears for drawing a circle through three points, around a center point, tangential to three points, and so on. topCAD imports and exports a wide range of formats (including a spreadsheet format, helpful for generating materials lists); provides 20 levels of undo; adjusts dimensioning when you change an object; and lets you select objects by characteristics, for example, all polygons and all splines on layers 127 through 155.

topCAD is already available in this country, but Graphisoft has focused its energy on ArchiCAD and will not have a United States sales-and-support framework for topCAD until 1991. The

> U.S. list price is equivalent to European pricing at \$4800. Copyprotection is common in Europe, and Graphisoft is selling topCAD in this country with Europeanstyle hard-key copy protection, which requires a device on the SCSI bus. For more information contact Graphisoft USA in South San Francisco, California, at 415/266-8720, 800/344-3468.



### Liveware Is Born



Fellow carbon-based life forms, take heed! Siliconbased life is on its way. You

needn't take cover yet, however. So far, computer-based life is only a gleam in the eyes of those who attended the second Artificial Life Conference last February. At the week-long conference in Santa Fe, New Mexico, participants demonstrated an impressive array of



Harold Thimbleby of Stirling University introduced the concept of liveware.

digital ecosystems, from cellular automata to simulated ants.

A number of artificial life (AL) projects were created on the Macintosh. James Kalin demonstrated Maxis Software's SimCity, a combination game and educational tool in which a city populated by Sims (simulated citizens) must be kept running smoothly as it evolves. Kalin says he'll use some of the information he garnered at the conference to enhance future versions of SimCity, making the Sims more lifelike and offering them different ecosystems. Michael Travers, a graduate student at MIT's Media Lab, showed a simulated world where artificial ants leave trails for other ants to follow to artificial food. John Holland created Echo, a miniature world populated by organisms that move about their environment, eat resources (and each other), and reproduce, perpetuating the chromosomes of the survivors. Apple fellow Alan Kay described the Vivarium Project, in which elementaryschool students can create their own creature-filled environments on the Macintosh

So, has anyone come close to creating artificial life yet? Unfortunately, the artificial organism that meets most of the criteria for being "alive" is-you guessed it-the computer virus. These critters are, to tick off some requirements, complex, self-replicating, and tolerant of changes in their environment. They carry information, absorb information from their surroundings, and exhibit purposeful behavior. Horrifyingly enough, two Mac virusesnVIR-A and nVIR-B, can "mate"-one virus overwriting a portion of the other's code to produce a new strain unlike either of the parents.

On the brighter side, one confer-(continues)

# QUALITYTIME

You Have Better Things To Do Than Back Up

If you can think of better ways to spend your time than backing up your hard disk, you need Fastback II. It's the world's fastest and most reliable backup software for the Macintosh. It's also the easiest to use, with simplified file selection, adaptable data compression, advanced error correction and other features to make your backups fast and foolproof.

You can even schedule *automated backups* to take place at any chosen time. Even when you're otherwise occupied.

After all, you have better things to do.

Dealers circle 364 on reader service card

End Users circle 250 on reader service card This product is in no way associated with

This product is in no way associated with or has origination in Pisher Scientific or Allied Corporation.

TION.

Version 2.1 Now Shipping! Call for Upgrade Details.

FIFTH GENERATION SYSTEMS

For a complete list of features and specifications, or the name of your nearest dealer, call 1-800-873-4384.



ence participant has harnessed the power of purposeful, self-replicating programs for good instead of evil. Harold Thimbleby of Stirling University, Scotland, introduced the concept of liveware, software that automatically updates a database that's passed from one user to another. Thimbleby got the idea for his autonomous database when he needed to collect information on some 50 colleagues who shared his interest in human-computer interaction. Toward this end, he created a HyperCard stack. Rather than send out 50 disks, get them back, and compile the information for each person, he decided to make the software do the work. His liveware application automatically adds information from one stack to another, allowing a community of users to keep a database up to date. An autotrigger option causes the stack to perform a merge whenever it encounters another liveware database; if this autonomy is too viruslike for a user's taste, a manual merge button returns a degree of control to the stack's owner. Thimbleby's stack not only incorporates new cards, but time-stamps each entry to allow users to update existing cards. The database also includes a bulletin board where users can post messages.

Liveware, like any form of shared information, raises the issue of security. To prevent a stack from being corrupted, the originator of a database can specify a password, requiring authorized users to log in. If a database does become damaged, chances are good that another user in the group will have an undamaged version.

Liveware has other potential uses. If you use one Mac at home and another at the office, for example, you could use a liveware application to keep the files on both machines current. Liveware could also be used by a system administrator to update software on a group of Macs when a new version of a program is released. Another potential application is automatic file backup.

Although viruses have made Mac owners squeamish about the idea of data crawling around on its own, perhaps liveware will revitalize communal computing. In the hands of responsible people, a little digital autonomy could be a good thing.—Erfert Fenton

### **Crashing Works' Party**

TML Systems, known to Macintosh developers for its TML Pascal, is writing a seven-module integrated package to challenge Microsoft where the giant has no competition. TML says the new product, code-named Zebra, will have much greater capabilities than Microsoft Works 2.0 but will list for the same price. Zebra's seven parts include a



TML Systems' Leonard brothers: Randy, Bob, and Tom. Tiny TML hopes Zebra gets the last laugh on Microsoft Works.

word processor, a database, a spreadsheet, telecommunications, draw and paint modules, and a charting and graphing module.

TML is giving the modules some unusual integration. Tools from every module are available in every other

module where appropriate—for example, text tools are available everywhere (except in telecommunications)-giving you access to the Microlytics spelling checker and the word processor's MacWrite-like style sheets in spreadsheets, databases, and charts. It also has live links so, for example, you can move spreadsheet data into the charting module, make a chart and

paste it into your word processor and, when you change the original spreadsheet, Zebra will update the finished chart inside the word processor.

Zebra's word processor presents a dialog box to choose database fields for mail merges. It can display text in columns, has on-screen headers and footers, and can wrap text around graphics. Live text from the word processor can also be linked to the draw module, which has linked text blocks to give Zebra some layout capability.

The database has a forms-oriented interface that warns you when you set a field outside the print area. It duplicates FileMaker's query-by-example method and search syntax, and adds one feature FileMaker lacks: a scrolling memo field. Zebra implements XTND, Claris's open file translation technology, and, being the hackers that they are, the people at TML Systems have cracked the Excel and Works file formats, so Zebra can import and export spreadsheets from both. Its spreadsheet duplicates Excel's function set, though Zebra lacks a macro command language.

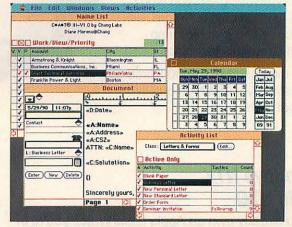
Zebra will list for \$295. For more information, call TML in Jacksonville, Florida, at 904/636-8592.—**D.L.** 

### The CAT's Third Hat



Chang Labs' CAT (Contacts, Activities, and Time) is back as CAT III, older, wiser, and—

Chang Labs hopes—less mysterious. In previous incarnations the informa-(continues)



CAT III's new template-design window; behind it, the Name List consolidates tiny windows from version 2.0.

### When LaserMAX Made Headlines Lino Also Made the Paper.

All ad copy was produced on a LaserMAX 1000 Personal Typesetter.

### LaserMAX Announces Personal Typesetting™

LaserMAX made headlines when we announced our new Personal Typesetter. The LaserMAX 1000 Personal Typesetter gives you 1000 dpi and 135 typefaces in a package that fits on your desk. Our proprietary TurboRes™ technology lets us control the size of the pixels on the printed page, eliminating the coarse steps between pixels (also known as jaggies.) With TurboRes you create originals that rival phototypesetting-so you won't need to go to Lino anymore. Halftones and graphics also benefit from this technology.

With the LaserMAX 1000 Personal Typesetter you get high quality without high cost.

### Goodbye NTX, Hello NTQ

If you already own an Apple LaserWriter, you're in luck. With a LaserMAX MX6 controller you can boost your resolution from 300 dpi all the way up to 800 x 800 TurboRes for Near Typeset Quality.

### The MAXimum

If you're the type who never settles for less than the MAX, you'll want the LaserMAX 1000 Personal Typesetter. With 1000 x 1000 TurboRes, you'll need a printer's loupe to prove that the output isn't traditional typesetting. But unlike phototypesetting, the LaserMAX 1000 is:

- Low-cost (only pennies per page),
- Low-maintenance (no toxic chemicals),
- Very affordable (\$7995).

### Free Sample Output

To learn more about the magic of the LaserMAX Personal Typesetter, call us now at (612) 944-9696. We'll send you a page of actual output so you can see just how good it really is. Then you can decide for yourself which you'd rather have: the technology that lets you make tomorrow's headlines, or yesterday's classifieds?



First In Personal Typesetting™

Personal Typesetting is a trademark of LaserMAX Systems. TurboRes™ is a trademark and patent-pending technology of LaserMaster Corporation. Macintosh and LaserWriter are registered trademarks of Apple Computer, Inc.



tion manager drew praise for integrating people-tracking, correspondence, and conversations. But CAT was also criticized for having a complex interface and a rigid structure that resisted tailoring to individual needs. CAT III addresses these two problems and adds many new capabilities, including forms design and a system for users to share data files.

The miniature Account, Contact, Contact List, and Codes windows of old have been incorporated in a single Name card, and the Push, Pop, and Exchange commands have been replaced by a simple Enter button, simplifying navigation and data entry. The ambiguous Events category is now called Documents, which, given CAT's mail-generating orientation, is a more appropriate name.

The forms-design environment provides basic drawing tools, a Claris SmartForm-like list field, and a library for storing company logos, digitized signatures, and so on. You can set up calculations using standard arithmetic operators and functions that create check boxes, running totals, and serial numbers; compute sums, maximums, and counts; and even generate standard deviations. Fields can use other fields in calculations or extract information from raw text in the Notes field—if you bracket data as you write in the Notes field, CAT III effectively creates a new field for the bracketed information. As you begin to systematize data entry, your notes become accessible to all of CAT's features.

For example, if you bracket your contacts' birthdays, you can generate a batch of happy birthday letters every week. CAT can now perform mail merges without creating a document for each letter, so you won't be packing your hard disk full of birthday notes.

Finally, CAT III implements a publishand-subscribe metaphor for sharing files on a network. If you travel, it exports records you create on the road and loads them into your workgroup's database when you get back to the office. And for getting started with CAT, which in earlier versions was a challenge, there are new controls for managing messy data when importing text files.

CAT III still lacks a few tools that users may want, in particular, timebilling features and a really good daily planner- and calendar-management capability. The new version will list for \$495. For more information, contact Chang Labs in Santa Clara, California, at 408/727-8096.—D.L.

### Dynamac Introduces SE/30 Portable

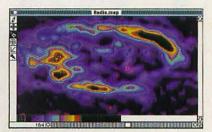
Dynamac, longtime maker of laptop Macs, has introduced its Dynamac SE/30, a more portable version of Apple's SE/30. The laptop includes an Apple logic board, a 640-by-400-pixel electroluminescent display, and an internal board that combines a 2400-bps modem and a 4800-bps send-only fax modem.

Intended as a mobile executive workstation, the Dynamac SE/30 includes Sharp's Wizard, an electronic personal organizer, and MindShare personal-information management software. MindShare organizes your calendar, Rolodex, and to-do lists. The software can help you track conversations, action items, and agreements with co-workers about delegated tasks.

The Dynamac SE/30 lists for \$8995



The Dynamac SE/30 comes with an Apple SE/30 logic board and an internal fax modem installed.



Data from a neutron-star simulation. Colors were remapped with Spyglass to highlight features.

inluding 2MB of RAM, a 40MB hard disk, and a cable for connecting to the Sharp Wizard. It supports a variety of Apple monitors, including the 13-inch RGB display. Options include up to 8MB of RAM and a choice of internal hard drive ranging up to 200MB in capacity. For more information, contact Dynamac in Denver, Colorado, at 303/296-0606 or 800/234-2349.—T.M.

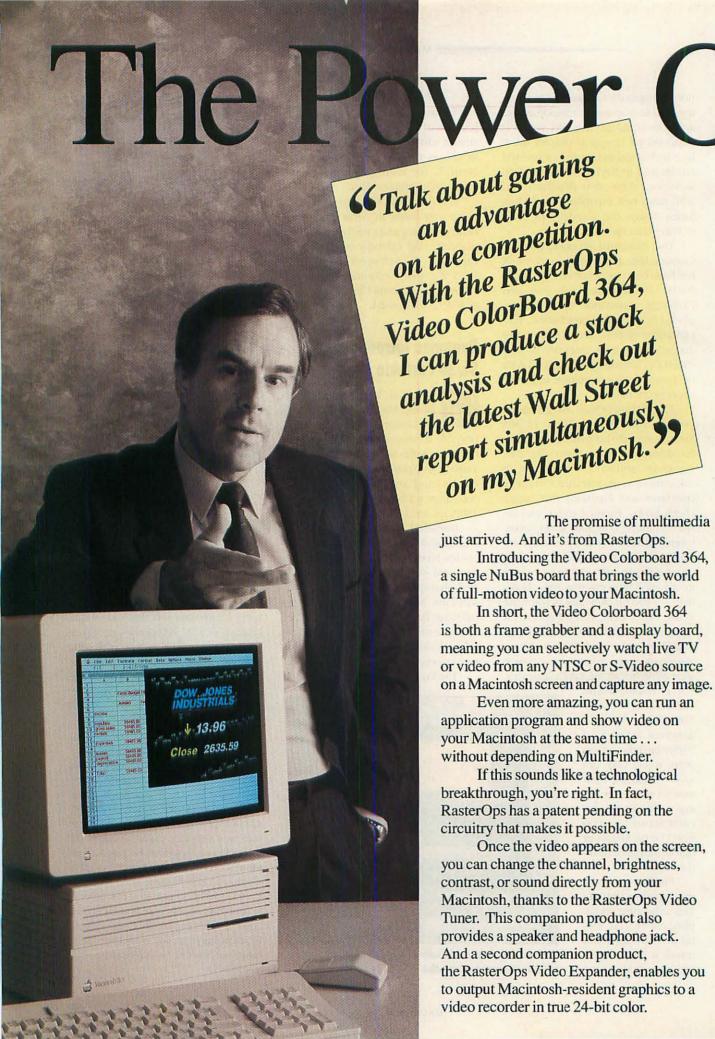
### **Colorizing Data**



Like many physical scientists, Colleen Barton has to isolate a few meaningful numbers

buried in vast arrays of numerical data. Barton is a postdoctoral student at Stanford's Center for Borehole Geophysics, studying holes drilled by oil companies in search of petroleum. The instruments that scan the borehole walls return data sets that can run as large as 600 by 2000 cells—so many that Barton could never pick out where oil-bearing sandstone meets impermeable granite, for example, or the bore-hole plunges through a fracture in the earth.

Instead of looking at raw numbers, Barton converts them to color images. In conjunction with a cylindrical-geometry application she wrote herself, Barton uses an image-manipulation package that grew out of work at the National Center for Supercomputing Applications (NCSA) and is now for sale as a product called Spyglass. "I primarily use [Spyglass] for palette manipulation, extracting features that I wouldn't otherwise be able to see," Barton says. Compressing the palette around one region in an array is analogous to zooming in on a real image. By assigning more colors to a narrower range of numbers-increasing the (continues)



Multimedia.

66 The RasterOps Video ColorBoard 364 is a graphic designer's dream. This single board in my Macintosh lets me capture a 24-bit color image from a video source, then transfer the image into a desktop Publishing package. 59

For applications that require recording on a video tape, the Video ColorBoard and Video Expander is the perfect solution.

The Video ColorBoard 364 also represents a multimedia building block. RasterOps developed the XCMD software for the Video ColorBoard 364 to interact with applications such as SuperCard, HyperCard, and MacroMind Director. You can create training aids, presentations, and other tools that take advantage of its multimedia capabilities. Regardless of your application, one of the best parts about the Video ColorBoard 364 is its introductory price. At \$1,995, the Video ColorBoard 364 provides an incredible range of features at half the cost of competitive products.

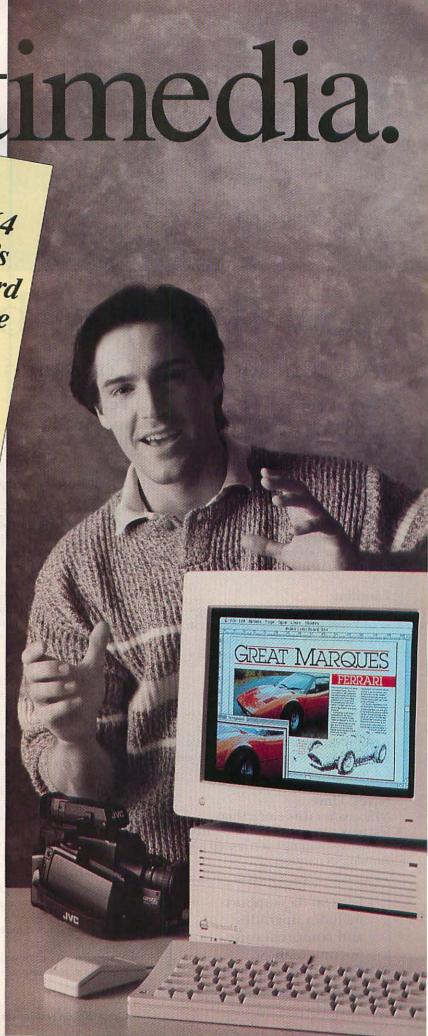
### Raster()1

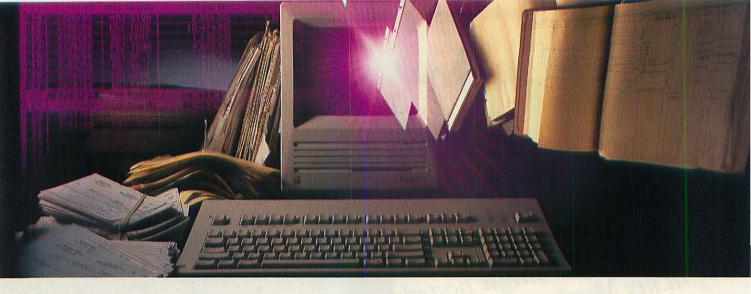
"We're changing the way people look at computers."

2500 Walsh Avenue, Santa Clara, CA 95051 USA Copyright 1990 RasterOps Corporation. RasterOps and ColorBoard are trademarks of RasterOps Corporation. All other brand names are protected by the trademark holder.

Call RasterOps HOTLINE 1-800-468-7600 for more information.

Circle 91 on reader service card





### Now that you bought Excel

### Account for it with Computerized Classic Accounting™

### Easy to Learn

If you use Excel, you already understand 60% of Computerized Classic Accounting™.

### Simple to Use

Computerized Classic Accounting™ performs the basic accounting cycle using Excel worksheets for data entry and easy pull-down menu commands to post journals and generate financial statements.

### Familiar

Computerized Classic Accounting™ is an Excel spreadsheet application. Any Excel worksheet is already a Computerized Classic Accounting™ document.

#### **Saves Money**

Auditing is performed on-screen virtually eliminating the need for paper print-outs. Money previously spent looking for errors is now saved for more productive tasks.

#### **Saves Time**

50% quicker data entry. Short learning curve, with Computerized Classic Accounting™ you are up and running in minutes.

- Free 90 day support includes upgrades and comprehensive documentation.
- Video tutorial is available.

### **Features**

- · General Ledger
- Fund Accounting
- Accounts Receivable
- Accounts Payable
- · Inventory control-intergrated
- · Job Costing-3 tier
- · Payroll-active
- · Mimics manually kept books
- · May be tailored for any business
- Networks with DOS & Macintosh computers
- · Graphs-ready made and custom
- · 1099's, W-2's and Payroll tax reports
- · Full Financials including Income, Balance Sheet Statements & Cash Flow Reports
- · Customize any financial statement
- · Daily bank balances
- · Powerful financial analysis does budgeting, forecasting, trend and ratio analysis...
- · On-screen audit capability
- · Copy and Paste for fast data entry
- Multiple cash accounts
- · Recurring entries easily created
- · Prints checks, invoices, vouchers, purchase orders, statements and credit memos
- · Payables and Receivables aging
- · Customer history reports
- · Customize Invoices & Purchase Orders
- · Password security
- · Multiple account transactions
- · Double entry accounting
- · Video tutorial
- · Supports unlimited number of companies
- A majority of accounting products can export to Computerized Classic Accounting™

"Computerized Classic Accounting™ takes relatively time-consuming and cumbersome tasks and makes them simple...Computerized Classic Accounting represents the most powerful interactive analysis tool reviewed

Bob Wolff, Computers in Accounting

"the Computerized Classic Accounting" /Excel combination provides a remarkable level of accounting, record keeping, and analysis in a simple, flexible product that can also be easily customized if necessary... Absolute Solutions provides superior telephone support..."

Ken Landis, MacUser



### **Prices Start at** \$99.00 To Order Now Call

Absolute Solutions Inc.

National 1-800-633-7666 California 1-800-458-3399 Alabama 1-205-547-5805 Canada 1-800-245-0223 International 1-619-966-8000

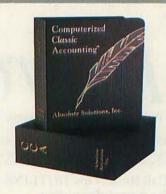


image resolution—you can see where numbers make sudden changes in value.

Spyglass is four applications: Spyglass Transform, which reads and writes floating-point data in HDF files and provides tools for manipulating data and recording the results; Spyglass View, with precise controls over color palettes (including a fiddle icon tool-for fiddling with colors) and the ability to animate a series of arrays; Spyglass Format, for turning a series of color images into an annotated presentation; and Spyglass Dicer (which is not derived from NCSA work), for boring holes and cutting chunks out of 3-D data sets to see what they look like inside.

Version 1.1 upgrades will add support for sparse data sets such as weather data; improved contour and surface plots that, the company says, will be as good as mainframe-generated contour and surface plots; better numerical control over color-mapping; and more import formats including TIFF, which will be useful for analyzing satellite photos.

Spyglass Transform and Spyglass View list for \$395 each, Spyglass Format for \$195, and Spyglass Dicer for \$495. Bundled sets are available at a discount. For more information, contact Spyglass Software in Champaign, Illinois, at 217/355-1665.—D.L.

### Breaking Those Mind Chains



David Zeeck is facing a series of problems. As executive editor of the *Kansas City Star*,

he is, step-by-step, merging his paper's editorial staff with the editorial staff of the *Star*'s former competitor, the *Kansas City Times*. Although the two papers' business operations have already merged, their editorial cultures have remained distinct. For example, Zeeck says, to do investigative reporting, "On the *Star* [we] always had a special-projects team. The *Times* always did it without a special team—their philosophy was that the whole paper should be involved."

To patch together answers to problems like that, Zeeck has been turning to MindLink, a HyperCard-



Using MindLink won't make you see colors, but it may blast the cobwebs from your mind with a dose of inspiration.

based brainstorming tool. MindLink incorporates ideas developed by Synectics, a management consulting firm that spun off from Arthur D. Little in the early 1960s. (The name derives from syn, meaning bringing together, and ectics, meaning diverse elements.) Synectics consultants go into large corporations and, at rates typically running \$10,000 or more, guide groups of managers in thinking creatively about their company's problems. (Before beta testing MindLink, Zeeck was familiar with Synectics through New Directions for News, a professional association of newspaper editors.)

MindLink leads you through developing wish lists and free-associating ideas, suggesting images and ideas to help your thoughts branch out. For example, on one card you might pose a problem; if you click on the Wishing Well button, you jump to another card where you can speculate about the problem or ask for triggers—key words, images, or even stories. Mind-

Link may even prompt you to get up and go for a stroll outside. Meanwhile, MindLink gathers your ideas and stores them until you are ready for the key task: turning wild ideas back into practical solutions.

What did Zeeck decide about investigative reporting? "I believe in a projects desk, but the *Times*' way has benefits too. So we'll . . . do it in a way where the inves-

tigative reporters are using other reporters from all over the building, "[MindLink] can't invent an answer you don't have inside you already," he adds. "But it might bring you to that answer more quickly. [And] it's much faster on the computer than in a group."

MindLink's price is \$499. For additional information, contact Mind-Link in North Pomfret, Vermont, at 802/457-2025.—D.L.

### Image Compression: The Wve of the Ftre?



Twenty-four-bit color images, color animations, and digitized video look great, but

they present a growing problem because they demand vast amounts of processing power, data storage space, and network capacity. However, an image-compression processor recently introduced by C-Cube MicroSystems promises to reduce the problem by compressing digital images by as much as 200 to 1, with an average gain of 20 to 1. The result could be much faster market acceptance of performance hogs such as color DTP and multimedia applications.

Called the CL550, the processor can compress or decompress full-motion video at the standard 30 frames per second. It takes less than a second to process the average color photograph, according to C-Cube. Just as important, the CL550 uses a method of compression proposed as a stan-(continues)

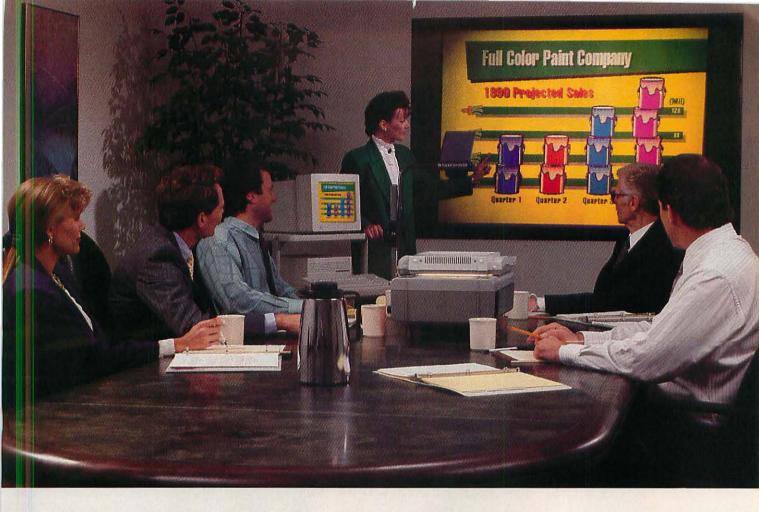


C-Cube cofounders Alain Rossmann (left) and Edward Sun show off the company's image-compression techniques.

RAKE SOREY



# Nothing compares to a



## n In Focus presentation.

Is your presentation technology as professional as you are? Does your audience become distracted while you're still fumbling around with slides and transparencies?

It's time to use an LCD projection panel from In Focus Systems.

You can project images onto a wall or screen directly from your computer. In "real-time." So you can share that information with any size audience.

You can present options and what-if analysis on the spot. Solve problems, explore alternatives, or edit ideas and proposals in seconds. You can even present computer information without bringing your computer to the presentation!

THE STATE OF THE S

You can also project brilliant color. And no other LCD projection panel can do the same.

Compared to any other method, an In Focus presentation is the most efficient, interactive way to present ideas in business meetings, training programs, classrooms, sales presentations, or workgroup computing sessions. Your meetings will become more dynamic. And more productive.

In Focus Systems offers a full family of PC Viewer® LCD projection panels. From high resolution black and white projection all the way to brilliant color. What's more, the 640 x 480 high resolution displays work with IBM,® compatibles, and the Macintosh® family. All are incredibly lightweight and easy to set up. And you get a full, one-year warranty.

So join the thousands of presenters who have already become more effective by using In Focus LCD projection panels. Call **1-800-327-7231** for more information or the dealer nearest you.

Then make your next presentation so dynamic, it's beyond compare.

See it. Believe it.

### IN FOCUS SYSTEMS INC.

Circle 63 on reader service card

7770 Southwest Mohawk Street, Tualatin, Oregon 97062 1-800-327-7231. In Oregon, (503) 692-4968. Fax: 503-692-4476.

IBM and Macintosh are registered trademarks of their respective companies.

# Data Is Money. Deposit It Here. TECALAR DATAVAUL to 10MB per minute—and file access of 45 seconds across the entire 1.3GB tape. Plus,

### DATaVault.™ The 1.3GB DAT Backup System From Tecmar.

The most important and valuable part of your computer system is the data itself. And there's no better place to deposit and protect it than DATaVault.

Here, dependable DAT technology and industry-standard DDS recording combine with a high-performance SCSI interface for the most versatile and reliable backup system yet.

DATaVault is truly an exceptional value. Compatibility with ISA, MCA and Macintosh® computers ensures flexibility regardless of your network or workstation environment. And media

TECM AR ri120

costs are less than 3 cents per megabyte. Data deposits and withdrawals are quick and easy with a backup speed of up the software does it all automatically!

DATaVault. Backed by Tecmar's 16 years of quality products and services. And you can take that to the bank. For full details, call 800.624.8560.

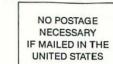
TECZU*A*R

Where Good Ideas Go To Work

All Tecmar products are trademarks or registered trademarks of Tecmar. Other brand and product names are trademarks or registered trademarks of their respective companies. ©Copyright Tecmar, a subsidiary of Rexon, Inc., 1989.

Circle 321 on reader service card

### Save \$23.40



### BUSINESS REPLY MAIL

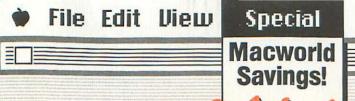
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

### **MACWORLD**

Subscription Department P.O. Box 51666 Boulder, CO 80321-1666





## 49% OFF

YES! Please send me a year (12 issues) of MACWORLD for only \$24. That's almost 50% off the annual cover price of \$47.40.

Name		
Company		
Address		
City / State / Zip		
Please bill me.	Payment enclosed.	
	the first issue. Basic subscription price is \$30 for 12 issues. The cilly, For Canada and Mexico, please add \$18 for shipping.	over price Is

More

bonst Myc-

For

You!



dard by the Joint Photographic Experts Group (JPEG) of the international standards group CCITT/ISO. If the proposed standard is adopted by the industry there is the potential for the chip and others like it to reside in computer systems communicating across diverse network architectures.

C-Cube says it is providing application developers with the C-Cube Compression Workshop, software that will let them adapt their applications to the image-compression processor. The Compression Workshop currently runs only on the Mac II family, but versions for both DOS and OS/2 machines are under development. The software costs \$500. For more information, contact C-Cube in San Jose, California, at 408/944-6300. — T.M.

### Datacopy Gray-Scale Scanner for Macs, PC ATs, PS/2s

Xerox Imaging Systems recently introduced the Datacopy GS Plus, an 8-bit grayscale scanner that works with Macs, PC ATs, and PS/2 systems. The scanner offers resolutions from 75 to 300 dpi, variable in increments of 1 dpi.

The Datacopy GS Plus scans an 8 <sup>1</sup>/<sub>2</sub>-by-11-inch document in two shades in about 21 seconds at 300-dpi resolution. It also supports up to 256 shades of gray and can accept standard- (8 <sup>1</sup>/<sub>2</sub> by 11 inches) and legal-size (8 <sup>1</sup>/<sub>2</sub> by 14 inches) documents. You can attach an optional automatic document feeder to the flatbed scanner after removing the lid from the GS Plus. The document feeder has a list price of \$595.

Available now, the Datacopy GS



The Datacopy GS Plus is an 8-bit scanner that offers resolutions from 75 to 300 dpi.

Plus has a suggested retail price of \$2195. The scanner uses the SCSI interface. For more information, call Xerox Imaging Systems in Sunnyvale, California, at 800/248-6500.—T.M.

### **Multimedia Art Education**



Part of modern experience is looking at modern art and wondering what to think and

feel, and whether you're really supposed to do either. Aware of this dilemma, educators from seven major

museums undertook a research and development program to see how technology-specifically, their Macscould make art less arcane. The project is near completion, and the results are two interactive multimedia prototypes. The subject of both is Impressionism-the work of Monet, Cézanne, Cassatt, and Seurat-and both include a videodisc of imagery drawn from collections around the world.

Would you like to see Monet's Water Lilies? Choose it from a

menu of the artist's works. Would you like a close-up of one lily so you can study the brush work? Place the cursor, click, and close in. If you like, select an audio explanation of what you see. Now, would you like to see the artist's studio, to learn how he worked and what else he painted? From there you might like to consider examples of his preoccupation with light. Go to the menu, choose Rouen Cathedral, then select video stills and motion video, and watch the light change at different times of day and in different weather conditions. Then compare these video images, side by side, with Monet's light studies and his final painting of the cathedral.

The prototype includes a videodisc player and disc, a Mac II, an Electrohome 19-inch long-persistence, monitor, a Truevision NuVista 4M capture board, a NuVista VidI/O Box, and custom software, written in C.

What's new about the technology here? First off, you see everything on one screen. The capture board and VidI/O Box convert the videodisc player's analog signal to digital, so that graphics and menus stored on the hard disk are combined with imagery from the videodisc. (The standard Mac multimedia configuration has been a Mac running HyperCard to control images from a videodisc displayed on an NTSC monitor, making users watch two screens at once.) The custom soft-



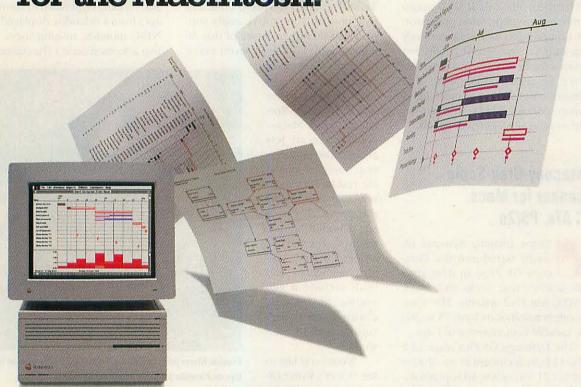
Frankie Mann (left) and Kathy Wilson helped create an interactive multimedia project on Impressionism.

ware also goes several steps beyond HyperCard, offering graphic overlays and picture icons in 24-bit color, plus a lot more speed.

Museum educators prefer high resolution for the scanned images, but have learned that it takes big chunks of memory and display time. Is it better to have a high-resolution image, even if it leaves the user waiting for it to appear? How much memory do you want to buy for the sake of high resolution? The results of two years of such trade-offs are now being tested at the Museum of Modern Art in New York City. The project has thus far been funded by the Getty Trust and the Pew Charitable Trust, but the museums will soon seek new funding.

The Museum Education Consortium is currently headed by Danielle (continues)

# Do the right thing at the right time. Now. Project Scheduler 4 for the Macintosh.



Project management software shouldn't just hand you information. It should speak your language.

That's why we designed Project Scheduler 4-the first professional project management system for the Macintosh that works the way you work. With the familiar Mac interface you can understand from the start. Powerful project control capabilities that streamline everything from initial planning and scheduling to resource

allocation, tracking, and analysis. And highly flexible reporting options that help you supply everyone involved in your projects the information they require to get the job done.

Now you can easily manage all your resources across multiple projects simultaneously. Use powerful interactive and automatic resource leveling to find the answers to important "what if" questions. Automatically account for resource-cost inflation. And create striking presentations and reports that clearly illustrate

problems-and opportunities-at a glance.

In short, Project Scheduler 4 gives you all the tools you need to do the right thing at the right time. Every time. For more information and a brochure, call or write:

### 415/570-7700

393 Vintage Park Drive Suite 140 Foster City, CA 94404

Macintosh is a registered trademark of Apple Computer, Inc.





Rice of the Philadelphia Museum of Contemporary Art. Other members represent the Museum of Modern Art, New York City; the Metropolitan Museum of Art, New York City; the Brooklyn Museum; the National Gallery of Art, Washington, D.C.; the Art Institute of Chicago; and the Museum of Fine Arts, Boston. The prototypes were designed by Kathy Wilson and programmed by Frankie Mann, with the help of a team of 15 art historians, museum educators, image-acquisition experts, and illustrators. For further information, call Susan Stedman at the Museum of Modern Art in New York City, at 212/708-9797.—Ann Garrison

### Mac to Welcome Open Plan

Welcom Software Technology is developing Open Plan/Mac, a version of its high-end project-management application Open Plan, which runs under dBase on DOS machines and under Recital on the VAX, for FoxBase+/Mac. The three versions share an identical interface, have identical feature sets (except that the VAX can manage ten times as many activities), and can share data files in a multiuser environment. Open Plan's key feature is the origin of its name: because a big chunk of it is written in uncompiled dBase (its computation engine is written in compiled FOR-TRAN), users can modify and customize Open Plan almost beyond recognition, adding new capabilities-for example, drawing and specification indexes or procurement registers-adding new fields, and reworking menus to accommodate added functionality.

Besides Open Plan's vast project capacity-10,000 activities, 250 resource types per activity, and unlimited resources per project-its feature set is impressive. It supports 256 calendars and generates reports using any or all of them. It also has a merge and copy system that makes it possible to duplicate parts of a project (for example, reusing floor 2 of a 20-floor hotel for floors 3 through 19); industry-standard Work Breakdown Structure and Organization Breakdown Structure; and sophisticated resource leveling with activity stretching, splitting, and reprofiling to manage groups



Korte Construction's Sharon Varel is betatesting Open Plan for the Mac.

of workers with differing start and quit dates and multiple subprojects with different priority levels.

Open Plan uses the 250-command WRL (Welcom Report Language) for creating reports. For programming-shy project managers, Open Plan/Mac will ship with 60 standard time-phased and nonphased reports. WRL can coax very precise reports from Open Plan—for example, color coding noncritical task paths by how much float they have.

Supplemental modules are available for Open Plan on the other platforms, and Welcom is porting some of them to FoxBase+/Mac. OPERA (Open Plan Extension for Risk Analysis), a risk-and certainty-analysis module, should be available about three months after Open Plan/Mac ships; COBRA (Cost Breakdown Application), a performance-measurement and cost-reporting system that meets the United States Department of Defense's Cost Schedule Control System Criteria, should ship about three months after OPERA.

For users who prefer a Mac interface to the dBase- or VAX-like interface, Open Plan's extensibility should make it possible to write a front end in HyperCard or a similar application generator, though its massive feature

set would make that quite a project. Open Plan/Mac costs \$4200 for a single user; site licenses are less expensive per user. A demo version with full documentation is available for \$100. OP-ERA will list for \$2200 and COBRA for \$5000. For more information, contact Welcom in Houston, Texas, at 713/558-0514.—**D.L.** 

### New Graphing Tools from Bravo

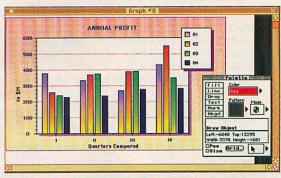


Bravo Technologies was known in the Mac's early days for publishing the fast and

clean spreadsheet MacCalc. Now Bravo is back with a new product tentatively named MacGraph, a sophisticated business and scientific graphing package to compete against DeltaGraph and the long-awaited FoxGraph. MacGraph creates pie, bar, stacked bar, and area charts, line graphs, and scatter plots—with many variations on each—and it has features for customizing tables of data.

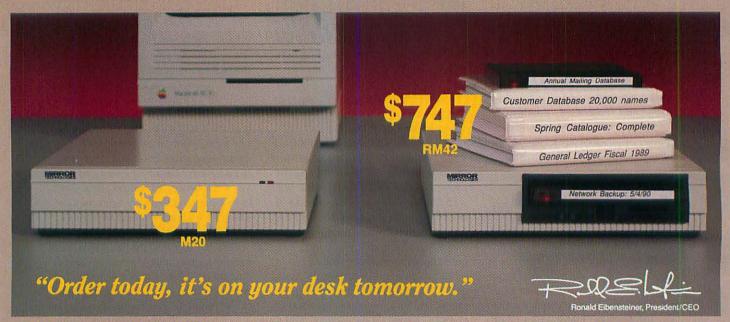
Key among MacGraph's features is its open architecture. Scientists or financial analysts who exhaust its list of functions can write their own in a standard programming language, or use the many public domain routines already available. Drop a function in the appropriate folder and it appears under the Equations menu. MacGraph also provides logical, arithmetic, and comparison operators for manipulating data. Other tools for changing file types and cleaning up data facilitate importing data from instruments or other computers, including mainframes, and a dialog box provides a point-and-click method of creating new numeric formats.

MacGraph has some unusual but intuitive Mac interface extensions. It creates its own desktop (as Odesta's Data Desk and Double Helix do), with icons arranged down the left side of the screen. Two shades of gray indicate columns of independent and subindependent variables, and special (continues)



MacGraph provides a wide range of formatting capabilities with a powerful set of data-manipulation tools.

# Save Enough On Our To Buy Our #1



### **Editors And Customers Love It!**

The technology behind our RM42 is the first that editors unanimously rallied around. Editors, concerned about reliability, torture tested the cartridges (one even survived an accidental flight of stairs). Our RM42 delivers infinite storage on 42Mb cartridges, and it does it faster than most hard drives (20ms).

Editors also love our M series drives.

"If I could choose from all three manufacturers . . . I'd prefer the Mirror"

Customers are using our RM42 removable drives everywhere and for everything:

- Publishers in New York are organizing projects by cartridge
- Designers in Sioux Falls are archiving entire clip art libraries
- Many of our customers are backing up data for the very first time with our RM42!

"Your [RM42] appears to be better built . . and most importantly, it was quiet. Even better was your service. You have a product and personnel to be proud of."

-Judge E.R. Wedoff, Chicago, IL We Repair The Competition's Drives



. and we've seen them all (Apple, Jasmine, SuperMac, GCC, PCPC, Ehman, and others). We've learned a lot about how (and how not) to build a hard drive. Most

companies don't employ ESD static protection, pre-testing of sub assemblies, or utilize gold plated contacts. We do. So rest easy, your precious data is in good hands.

### Factory Direct Saves You Hundreds

It's because of our direct strategy that we can deliver all this product and service at a great price. We eliminate the confusion and expense of middlemen. It's just you and us the folks who build them.

### Downtime . . . Practically Eliminated

You're not buying bookends. These are mechanical devices that spin at 3600 RPM for their entire life. That's why we created MirrorLoan, an overnight program that speeds a loaner to you. It's just one of the essential services you shouldn't be without.

### We Hand Test Each M Series Drive

Size (Mb)	Int.	Ext.
20	\$267	\$347
30	317	397
40MP*	417	497
45	367	447
60	_	547
80	_	597
80MP*	667	747
105MP*	717	797
200MP*	1117	1197
290MP*	_	1997
580MP*	_	2497
* MD declaret		alabas

While most companies sample test, we test every drive so the drive you receive is hand tested. It arrives pre-formatted, and loaded with 10Mb of software. Inside are the best and fastest components MP designates premium drive available (Quantum,

Imprimis, Seagate), an international power supply, SCSI switching, fan, and cables.

### Our #1 Removable: The RM42

Here's what you get for \$747: Proven Syquest technology, full steel chassis, international power supply, convenience outlet, SCSI selection, RFI/EMI filtering, ultra-quiet fan, gold plated contacts, and all necessary cables. And it's backed with the longest supported warranty in the industry. It's everything you'd expect from a \$1,500 removable for \$747.

Remember, order today, it's on your desk tomorrow. ??







# PixelView II Display Removable Drive



### Wit Took Time To Build A \$1,700 Display System For \$897

We sourced tubes from the same folks as Apple. We chose the same phosphor. We tuned the system to 78hz vertical refresh rate to eliminate annoying flicker. And we built in enhancements like pop-up menus, sizable cursor and menu bar, screen saver, screen copy and more! With all this for \$897, what'll you do with the \$800 difference? (hint: check out our RM42)

### From Plus To Portable; We've Got You Covered

We have a PixelView I and II system for every Macintosh being made: Mac Plus, SE, SE30, Mac II, IIx, IIcx, IIci, IIfx, and portable. Each PixelView system comes with everything you need: monitor, card, cables, manual, and software!

#### COMPARE!

19" Monitor	Radius	Mirror
Anti-glare	yes	yes
Both screens active	yes	yes
WYSIWYG	yes	yes
78hz vertical refresh rate	no	yes
Pop-up/Tear-off menus	yes	yes
Cursor sizing	yes	yes
Menu sizing	yes	yes
Screen saver	yes	yes
Screen copy	no	yes
Full year warranty	yes	yes
Dealer Markup	yes	no
Street Price	\$1,695	\$897

(Best Street Price 4/1/90)

### I Used To Think That Large Screens Were A Luxury. Now I Can't Live Without One.

Until now, large screen displays cost more than the computer (and yet even at those high prices, I found them to be the top productivity tool on my Macintosh). PixelView delivers that same productivity, but at prices anyone can afford.

### Take One For A Test Spin (but don't say I didn't warn you)

Take my modem. Take my (gulp) hard drive, but leave me my monitor. I feel that strongly and believe you will too. Don't go another week squinting and scrolling - here's my personal guarantee to you - try either Pixelview for 30 days. If it isn't exactly what you expected, I want it back. Period. 99



TO ORDER CALL



TECHNICAL SUPPORT HOTLINE: (612) 633-2105 Hours: Mon-Fri Bam-6pm CST

2644 Patton Road, Roseville, Minnesota 55113 (612) 633-4450 FAX: (612) 633-3136 VISA - 6-

Circle 424 on reader service card







Wherever you find the world's leading computer and telecommunications

equipment at work, you'll often find them plugged into ACCO® products. Because ACCO is first in line with state-of-the-art surge protectors, switching and sharing devices, fax furniture and support equipment. So, if you have sophisticated electronics to plug in, plug into ACCO.

All product names and logos are trademarks or registered trademarks of their respective owners.



Elite Surge Protectors



Fax I Line & Cleaning Products



ACCO

© 1990 ACCO International, Inc.

Circle 315 on reader service card

cursors appear when you sort and select data that simplify the graphing of discontiguous or hierarchical subsets of data.

Unlike the venerable CA-Cricket Graph, with MacGraph all graphs generated from a data set stay together as one file using one background page, called a Letterhead, throughout. You can place graphics, headers, and footers on the Letterhead, making them appear on every graph's page, or you can add text and graphics page by page. MacGraph generates attractive finished graphs and provides a standard Mac drawing palette and 32-bit color support. You can modify almost every part of a graph, including text, frames, fills, line widths, how far tick marks are offset from axes, and so on. To overlay a line graph on top of a bar chart, you select the second set of data for the line graph and-what else?hold down the Shift key as you issue the line graph command.

MacGraph does not create true 3-D graphs, though it does make 2<sup>1</sup>/<sub>2</sub>-D-like shadows. Bravo Technology president Richard Ross says 3-D graphs must be skewed or distorted to be seen on a flat surface—a computer screen or paper—so they give inaccurate impressions.

MacGraph's list price was undecided at press time but should be less than \$200. For more information, contact Bravo Technologies in Berkeley, California, at 415/841-8552.—D.L.

### Erasable Optical Drive Works with Macs and PCs

Tecmar has introduced an erasable optical drive that can work with Macintoshes and IBM PCs, holding up to 650MB of Mac, DOS, and OS/2 files on a single removable disc. Called the LaserVault 650, the device is based on a Sony erasable optical drive and requires an additional connection kit for each of the three types of systems supported: Macs, PC ATs and compatibles, and PS/2s and compatibles.

The LaserVault comes with software that you use to separate each removable, erasable optical disc into separate volumes, depending on the type of system you have. Other in-



Tecmar's LaserVault 650 erasable optical drive stores 650MB and can work with Mac, PC AT, and PS/2 systems.

cluded software provides automatic setup and archiving features. The LaserVault uses the SCSI interface.

The LaserVault and connection kits for the Mac and PC AT were all scheduled to be available now. The Laser-Vault with PS/2 kit should begin shipping in July. The LaserVault drive lists for \$5495 without a connection kit. For more information, contact Tecmar in Solon, Ohio, at 216/349-0600.—T. M.

### Survey: System, System, Who's Got the System?



This month's survey, which was mailed to 1000 subscribers, examines *Macworld* read-

ers' use of and opinions about Systems and Finders. Readers were given

a list of Apple-recommended Systems and Finders and asked if they were using the correct ones for their machines. A reassuring 83.3 percent of respondents answered yes, 9.6 percent answered no, and 7.1 percent said they did not know.

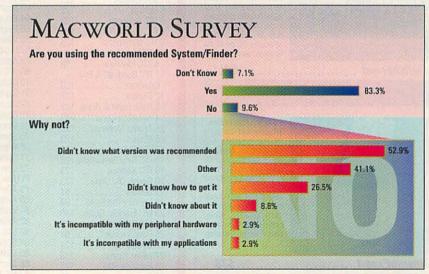
Readers who answered that they use a System and Finder not recommended by Apple were asked to state all reasons why. Of those readers, 52.9 percent pleaded ignorance and 26.5 percent said they didn't know how to get the upgrade.

Readers were also asked how often they used MultiFinder. 59.5 percent of all responding readers said they seldom or never use MultiFinder, 13.1 percent said they sometimes use it, 6.8 percent said they use it often, and 20.5 percent said they always use it.

When asked how likely they were to update to System 7.0, 48.6 percent of all respondents said they were extremely or very likely to make the update, 30.7 percent said they were somewhat likely, 15.9 percent said they were not very likely, and 4.8 percent said that they were not at all likely to update.

Of those readers who said they were extremely or very likely to make the update, 40.9 percent said that the most important feature of System 7.0 will be outline fonts, 16.4 percent picked virtual memory, 15.7 percent said Finder 7.0, and 13.2 percent cited interapplication communication.

— Jonathan Cassell



9.6 percent of readers responding to our survey said they do not use the System/Finder recommended for their CPU. Of these, 5.8 percent cited incompatabilities as the reason.

### FREE Mouse Pad with every May order!

Where savings are huge and advice is free.



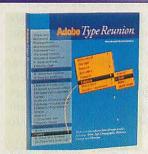
### Purchase orders SOFTWARE gladly accepted



### 1stAid Software, Inc.

A package no hard disk user should be without. Includes 1stAid Kit (complete Mac troubleshooting, including file & disk recovery), Complete Undelete (ultimate utility for recover-ing trashed files), and Sector Collector (safeguards data on hard disks by isolating bad sectors).

Deluxe 1stAid Kit ......\$116.



#### Adobe Systems

How to find a face in a crowd: If you're tired of searching your crowded font menu for a particular typeface, just place Adobe Type Reunion in your system folder and your typefaces are automatically alphabetized and conveniently sorted by family name and weight. Once and for all.

Type Reunion ...... CALL



User configurable key-board. Modular design allows user to arrange the Alpha, Cursor, and Numeric keypads into many different positions. Other devices, (trackball, vertical function keys, digitizer tablet, programmable macro keys, etc.) may be substituted or otherwise added to the keyboard as well.

Switchboard ...... CALL



A Lasting Impression

40 plus eye-catching résumé templates fully formatted in Microsoft Word. Quick and easy to use - just highlight the text and replace with your own information. Man-ual provides helpful writing tips. Effective for students to CEO's. Cover Letter edition also available. Four mouse rating.

RésumExpert ......\$38.



MacZone page 1 of 8



1st Aid Software	
Complete Undelete	36
Deluxe 1st Aid Kit 1	16
Sector Collector	36
	50.
3g Graphics	
lmages w/lmpact	
Accents & Borders 1	64.
Business 1	64.
Graphics & Symbols 1	50.
A Lasting Impression	
Computer Science &	
Engineering	38.
Cover Letters	38.
Finance & Banking	38
For Managers	38
For Managers For Sales & Mktg Pros	38
For Studente	38
For Students	20
	JO.
Aatrix	
CheckWriter II	36.
Payroll 3.51	08.
Payroll Plus1	74.
TimeCard1	18.
Payroll Plus	74.
Abbott Systems CanOpener 1.1	
CanOpener 1.1	62
ACIUS	·
Abb Dimension 0.0	11
4th Dimension 2.0 5	14.
Addison Wesley	
Programmers Online	
Companion 2.1	36.
Adobe	
ATM Plus Pack1	กล
Illustrator 882	7/
Photoshop5	28
Streamline2	20.
True Form	20.
True Form2	24. EE
Type Manager	33.
Type Reunion CA	ALL.
Typeset I or II	ALL 58.
Typeset I or II	58.
Typeset I or II	58.
Typeset I or II  Adobe Postscript Fonts 1 Palatino	58. 23. 23.
Typeset I or II	58. 23. 23. apf
Typeset I or II	58. 23. 23. apf
Typeset I or II	58. 23. 23. apf
Typeset I or II	58. 23. 23. 1pf 92.
Typeset I or II	58. 23. 23. 1pf 92. 23.
Typeset I or II	58. 23. 23. pf 92. 23. 23. 23. 23.
Typeset I or II  Adobe Postscript Fonts 1 Palatino	58. 23. 23. apf 92. 23. 23. 23. 23. 23.
Typeset I or II  Adobe Postscript Fonts 1 Palatino	58. 23. 23. apf 92. 23. 23. 23. 23. 23.
Typeset I or II	58. 23. 23. apf 92. 23. 23. 23. 23. 23.
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. apf 92. 23. 23. 23. 23. iter 93.
Typeset I or II Adobe Postscript Fonts 1 Palatino	58. 23. 23. 19f 92. 23. 23. 23. 23. 1ter 93.
Typeset I or II	58. 23. 23. 19f 92. 23. 23. 23. 23. 1ter 93.
Typeset I or II	58. 23. 23. 19f 92. 23. 23. 23. 23. 1ter 93.
Typeset I or II	58. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II	58. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 29. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 29. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II Adobe Postscript Fonts 1 Palatino	58. 23. 23. 29. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. 23. 29. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II	58. 23. 23. 27. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II	58. 23. 23. 27. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II Adobe Postscript Fonts 1 Palatino	58. 23. 23. 29. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II Adobe Postscript Fonts 1 Palatino	58. 23. 23. 29. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II Adobe Postscript Fonts 1 Palatino	58. 23. 23. 29. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23
Typeset I or II  Adobe Postscript Fonts  1 Palatino	58. 23. apf 92. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23.
Typeset I or II Adobe Postscript Fonts 1 Palatino	58. 23. apf 92. 23. 23. 23. 23. 23. 23. 23. 23. 23. 23.

Brushscript ...... 93.

a mee.
34 Aachen, Revue, Univ.
Roman & Freestyle Script
123.
35 Carta61.
36 Lucida123.
37 Univers 243.
38 Univers Cond 180.
39 Futura Light 180.
40 Stone Serif 180.
41 Stone Sans Serif 180.
42 Stone Informal 180.
43 Corona
44 Eurostile 180.
45 Excelsior 93.
46 Futura 180.
47 Futura Cond 243.
48 Lucida Sans 123.
49 Memphis243.
50 Helvetica Compressed
93.
51 Italia93.
52 Belwe 123.
53 Caslon 3, Caslon 540
123
54 Goudy Ex Bold & Heavy
55 Janson Text 55, Janson
55 Janson Text 55, Janson
Text /5 123.
56 ITC Eras 180.
MAC II EXT NO



#### Mac II Ext Kit ...... \$29. MacTech

Increase your desktop space; move your Mac II family computer off your desktop with a Mac II extension cable

kit.	uie
57 ITC Kabel	123.
58 OCR-A, OCR-B, MICI	R93.
59 Helyetica 1	123.
60 Helvetica 2	180.
61 Helvetica 3	
62 Times Ten	
63 Kaufman	. 93.
64 Clarendon	
65 Peignot	. 93.
66 New Caledonia	243.
67 ITC Clearface	243.
68 Americana	123.
69 ITC Serif Gothic	180.
70 Century Expanded	. 93.
71 Serifa72 Caslon Open Face	1/8.
72 Casion Open Face	.61.
73 Frutiger	235.
74 Linotype Centennial	239.
75 Stempel Garamond	123.
76 Weiss	123.
78 Univ News, Commer	123.
Pi Univ Greek & Math P	Oa
70 Avanir 1	175
79 Avenir 1 80 Avenir 2 81 Walbaum	175.
91 Walhaum	123
82 Antique Olive	123
83 Life	93
84 Concorde	123
84 Concorde 85 Gothic 13 & Tempo.	93
86 Cochin	123
87 ITC Bauhaus	123.
86 Cochin	123.
89 Hiroshige	235.
Present Scr. & Helv I.	123.
91 Dom Casual	. 93.
OO Doot Antique	00

92 Post Antiqua ...... 93.

94 Linoscript & Linotext 93. 95 Vag Rounded
225. 107 Antique Olive II 123. 108 Parisian/Umbra 93. 109 Mistral/Reporter 93. 110 Nuptial/Cascade/Medici
93. 111 Bauer Bodoni II 123. 112 Meridien 175. 113 Copperplate Gothic243. 114 ITC Novarese 175. 115 Künstler Script 93. 116 Industria CALL 117 ITC Souvenir II 123. 118 Bodoni II 123. 119 Russell Square 93. 120 Charlemagne/Trajan
Advanced Software DocuComp87. AEC Management Systems
AEC Information Mgr 409. FastTrack Schedule 114.
Affinity Microsystems Tempo II
Aladdin Systems Shortcut
Freehand 2.02
DiskExpress II
FONTastic Plus51. Fontographer 3.0248. Antic Software
FONTastic Plus
FONTastic Plus51. Fontographer 3.0248.  Antic Software  Business Forms - PageMaker Vol. 1 Human Resources27. Vol. 2 Inventory/Stock27. Vol. 3 Operations/Admin27. Flexform Business Templates Volume I or II47.  ASD Software
FONTastic Plus
FONTastic Plus
FONTastic Plus

93 Folio

### THE INSIDE STORY

### **On Connectivity**

The MacZone has the products and the knowhow to build your network.

Whether you are connecting Macintoshes in New York or Timbuktu, the MacZone has the products and advice to create or enhance your network. Our full line of products provide high performance solutions.

### Re-connect with the MacZone GET A FREE MOUSE PAD!

The MacZone has recently enhanced our phone and order processing system and added more Mac advisors. If we missed your call in the past, we apologize and invite you to call us to experience the difference. And as a way of saying Thank You, we'll send you a free-mouse pad in every order shipped during the month of May.

A MacZone advisor is ready to help you make an informed decision about the hardware and software that's right for your application. We'll save you time and frustration with straight information before you order. And you'll save money with some of the lowest prices anywhere. For solutions to your Mac needs, give us a call.



Intl: (206) 883-3088 Canada: 800-248-0344 FAX (206) 881-3421

Where savings are huge and advice is free. Why buy anywhere else?

### Your MacZone Advisor Knows Hard Drives - and you should too.

Because the MacZone understands your need for information on hard drives, we have put together a comprehensive guide of our in stock hard drives. We hope that this guide will provide you with an inside look at each drive. Of course, if you have questions, please call one of our MacZone advisors at 1-800-248-0800.



	Integra 20	Integra 40	Integra 40Q	Porta 40	PLI 50 Turbo	Integra 80	Integra 80Q
Zone Price Zone Code Category Manufacturer OEM Mechanism Formated Capacity Access Time (ms) ID Selection Termination Cable (length, type) Warranty Software Bundled	S428 2636 External Drive Dolphin Systems Seagate ST125N-1 20.1 MB 28 ms Rotary Internal 4 ft 50/25 Pin 1 Year Dolphin Install, 7 MB Public Domain & Shoreware	S548 2638 Externol Drive Dolphin Systems Seogate ST157N 47 MB 32 ms Rotary Internal 4 fr 50/25 Pin 1 Year Dolphin Install, 7 MB Public Domein 8. Shareware	5588 2738 External Drive Dolphin Systems Quantum ProDrive 40S 40 MB 19 ms Ratary Internal 4 fr 50/25 Pin 2 Year Dolphin Install, 7 MB Public Domain & Shareware	S640 3263 Externol Drive Dolphin Systems Conner 3040 40 MB 25 ms Rotary Internal 4 ft50/25 Pin 2 Year Dolphin Install, 7 MB Public Damain & Sharewere, Battery Sover	S618 3268 External Drive Peripheral Land, Inc. Seagate STI 57N-1 48 MB 28 ms Rotary Internal 3 ft 50/25 Pin 1 Year Turbo Cache, Turbo Spool, Turbo Optimizer	S639 2640 External Drive Dalphin Systems Seagate ST1096N-1 20.1 MB 28 ms Ratary Internal 4 fr 50/25 Pin 1 Year Dolphin Install, 7 MB Public Domain 8 Shareware	S798 2739 External Drive Dolphin Systems Quantum ProDrive 805 78.8 MB 19 ms Rotery Internal 4 ft 50/25 Pin 2 Year Dolphin Install, 7 MB Public Domain & Shareware
	PLI 100 Turbo	Porta 100	Integra 105Q	Integra 170	PLI 250 Turbo	Integra 300	PLI 300 Turbo
Zone Price Zone Code Category Manufacturer OEM Mechanism Formated Capacity Access Time (ms) ID Selection Termination Cable (length, type) Warranty Software Bundled	S998 3273 Externol Drive Peripheral Land, Inc. Connor 100 105 MB 20 ms Rolary Internal 3 ft 50/25 Pin 1 Year Turbo Cache, Turbo Spool, Turbo Backup, Turbo Optimizer	S998 3264 External Drive Dolphin Systems Cenner 30100 102 MB 25 ms Rotary Internal 4 ft 50/25 Pin 2 Year Dolphin Install, 7 MB Public Domain & Shareware, Bottery Saver	S998 2742 External Drive Dolphin Systems Quentum ProDrive 1055 102 MB 19 ms Rotary Internal 4 ft 50/25 Pin 2 Year Dolphin Install, 7 MB Public Domain & Shareware	S1488 3271 External Drive Dolphin Systems Imprimis 170 173 MB 18 ms Rotary Internal 4 ft50/25 Pin 1 Year Dolphin Install, 7 MB Public Domain & Sharewore	S1948 3269 External Drive Peripheral Land, Inc. Hitachi 250 251 MB 16 ms Rotary Internal 3 ft 50/25 Pin 1 Year Turba Cache, Turba Bockup, Turba Optimizer	S2398 3272 External Drive Dolphin Systems Imprimis 300 330 M8 14 ms Rotary Internal 4 fit 50/25 Pin 1 Year Dolphia Install, 7 MB Public Domain 8 Shareware	S2398 3270 External Drive Peripheral Land, Inc. Imprimis 300 327 MB 16.5 ms Rotary Internal 3 fi 50/25 Pin 1 Year Turbo Coche, Turbo Spool, Turbo Backup, Turbo Optimizer
	Quantum 40	Quantum 80	Quantum 105	Flipper 44	Infinity 40	Infinity 40/40	Infinity Optical
Zone Price Zone Code Category Manufacturer OEM Mechanism Formated Capacity Access Time (ms) ID Selection Termination Cable (length, type) Warranty Software Bundled	S449 3245/3246/3265 Internal Drive Dolphin Systems Quantum ProDrive 405 39.4 MB 19 ms 2 Year Dolphin Install, Includes Bracket & Cables	S687 3247/3248/3266 Internal Drive Dolphin Systems Quantum ProDrive 80S 74.8 MB 19 ms 2 Year Dolphin Install, Includes Bracket 8 Cables	S797 3249/3250/3267 Internal Drive Dolphin Systems Quantum ProDrive 105S 103 MB 12 ms 2 Year Dolphin Install, Includes Bracket & Cables	S848 2416 Removable Media Dolphin Systems Syquest S0555 43 MB 20 ms Rotary Internal 4 ft 50/25 Pin 2 Year Dolphin Install, 7 MB Public Domain 8 Shareware	S1097 2181 Removable Media Peripheral Land, Inc. Syquesi SQ355 42.5 MB 19 ms Rotary External 3 ft50/25 Pin 1 Year Turbo Cache, Turbo Backup, Turbo Optimizer	S1936 2182 Removable Media Peripheral Land, Inc. Syquest S0555 42.5 MB/42.45 MB 19 ms Rotery External 3 ft 50/25 Fin 1 Year Turbo Coche, Turbo Spool, Turbo Backup, Turbo Optimizer	S4248 2854 Optical Media Peripheral Land, Inc. Sony 573 MB 60 ms Rotary External 3 ft 50/25 Fin 1 Year Turbo Cache, Turbo Spool, Turbo Optimizer

Berkeley System Design	1
After Dark	22.
Stepping Out 2.01	49.
Bitstream	
Baskerville	88.
Bitstream Charter	88.
Futura Medium	88.
Galliard	88.
Garamond	88.
Headlines 1 & 2 each	88.
Souvenir	88.
Blyth Software	
Omnis 5 Incrementer	74.
Omnis 5 Single User 3	74.



\$39.
Micro League Sports
Hall of Famers and All-Stars
alike take the field on your
own baseball diamond, and
you're the manager.

Hall of Famers and All-Stars alike take the field on your own baseball diamond, and you're the manager.
Bootware Software ResuméWriter - Pro 57. ResuméWriter - Student 17.
Borland International SideKick 2.0
Hyper Animator 1.5 97. Interface
Print Shop
Casady & Greene QuickDEX
DiskTop 4.0 w/GOfer 62. In/Out (1-10 User) 188. In/Out (1-5 User) 127. MockPackage Plus 30.
QuicKeys 1.2
1-50 Users CALL Administrator Pack CALL Single User Pack CALL Central Point Software
Copy II Mac 7.2 22. Mac Tools Deluxe CALL PC Tools Deluxe 42. Chang Labs
C.A.T
Payroll

4		IA	10	U	se	
(	Comp	outer	Asse	ociat	es	
	Simp Conn		cour	iting	1.1 2	224.
	Conr	ect E	Busin	ess I	nfo 2	.0
(	Conn	ectix				
1	Virtu Virtu	al - N al - N	Mac II	 W/P	MML	124. J
,		ol 6	E/20	IIv	llcx	87.
(	Craig	Mar	iagei	nent	·	14.
3	Syste Sche	ms dulel	Make	r	2	299
1	Crick	et So	ftwa	re		
	Crick	et Gr	anh	1.31		115.
	Crick Crick	et Pa	int esen	ts 2 (	0 2	64.
	Pict-	0-Gr	aph .		s Inc	103.
	Freed	iom (	of Pr	ess .	2	258.
		Dev			t 1	48
L	Data	Viz				
	Macl Macl	_ink { _ink }	Plus I Frans	PC 4	.0 1 s	18.
L	Dayn	a Col	mmu	nica	tions	
L	Dene	ba S	oftwa	are		
	BigTl Cany	nesal	urus 1			63.
	Coac	h Pro	fess	ional	1	24.
1	Ultra	Paint			1	
L	<i>Digita</i> Busir	al, et	<b>c.</b> Sens	e 1.2	2 2	268.
L	Digita	al Vis	sion			
L	Digita	alk			3	
		Talk Click			1	124.
1	Calcu	ılator	Con	st. S	et	44.
	1 & 2	Click Class	ssic (	Clip A	\rt	39.
	3 & 4	For	Publ	ishin	g lom .	39.
	7 & 8	Spe	cial (	Осса	sions lper .	39.
	11 &	12 1	ndus	trial I	Rev.	39.
1	15 &	161	sland	Life	Alm.	39.
U	Vorto	Clas	s For	ts	ople .	
,	Vol 1	& 2 & 4	(Orig	ginals Styl	s) ish)	39.
1	Vol 5	& 6	(Gia	nts).		39.
V	Vorla	Clas	s Las	erTy	De .	
1	lect	ronic	Arts		each	
	Disk Stud	Tool:	s Plu	S		31.
	Stud	io/8			2	294.
E	mer	ald C	ity S	oftw	are	
-	Smai Type	rt Art Aligi	1, 2	& 3	each	83. 57.
F	aral	lon			et	
1	Scre	en Re	ecord	er		124.
7	imbu	ıktu 3	3.0		1	
-	30 11	ser P	ack		1,2	84
	limb	uktu	Rem	ote.	dem 8	22.
I	ifth	Gene	ratio	n	1	
	Fast	Back	II			105.
	Pyro	4.0				22.
1	Suito	ase I	١			42.

Suitcase II ......42.

Foundation Publishing	
Comic Strip Factory	27
#1 Office Days	20
#2 Kid Stuff	20
Fox Software	
FoxBASE+ 2.0	201
FoxBASE+ Multi User	385
FoxBASE+ Runtime	175
FreeSoft	
Second Sight	99
Second Sight White Knight 11	84
Generic Software	
Generic CADD Level 1.	83
Haves	
Smartcom II 3.1	.84
Help Software	
Desktop Help for Excel	49
High Performance Syst	
STELLA 2.1	384
STELLA Stack1.0	275
HJC Software	_, _,
Virex 2.2	50
ICOM Simulations	00.
	58
HyperTMON On Cue 1.3	34
TMON 2.8.2	86
Individual Software	
101 Macros for Excel	36
101 Scripts & Buttons	36.
Informix	
Wingz 1.1	244.
Infosphere	
Liaison	174
Innovative Data Design	
Dreams	318
MacDraft 1.2b	168
Insight Development	A 5 5 5 5 7 7 5
MacPrint 1.2	94
	A PERSON

. 37. . 20. . 20.	
20	
20.	
20.	
291. 385. 175.	
385.	
175.	
00	
. 99. . 84.	
. 04.	
.83.	
84.	
. 04.	
49.	
. 49. ems 384. 275.	
384.	
275	
-1.57	
50.	
.58.	
.34.	
. 58. . 34. . 86.	
26	
36. 36.	
.30.	
244.	
174.	
17.	
318. 168.	
168.	

Times.

	Soft PC Portable24
1	The state of the s
	SYNCHRONICHY
	and the second
1	
	Synchronicity\$38.
١	Visionary Software
١	A mood altering experience.
١	"Best new software,
١	Macworks as a game, a tool
	and a stressbuster" - Seattle

Insignia Solutions Soft PC ......244.

Intuit	
Quicken 1.5	35.
Jam Software - Smar	1
Alarms	
Single User Version	
1-4 Users	98.
5-8 Users	148.
9-15 Users	198.
16-25 Users	295.
Kent Marsh	
MacSafe II	106.
Night Watch	84.
QuickLock	55.
Kiwi Software	
KiwiEnvelopes!	34.

Layered
At Once!284.
Insight Expert Series
Accounts Payable 394.
Accounts Receivable 394.
General Ledger394.
General Payroll394.
General Time Billing 394.
Inventory394.
Letraset
ColorStudio
DesignStudio
FontStudio
ImageStudio273.
LetraStudio273.
ReadySetGo! 4.5 273.
Lexpertise U.S.A. Inc.
Mac Proof 3.2.1 114.
Loop Software
Picture Book39.
Lundeen & Associates
Works Plus Command 84.
Works Plus Spell 56.
Mac Master
FEdit +28.
MacroMind
MacroMind Accelerator 124.
MacroMind CD ROM 149.
MacroMind Director 438.
VideoWorks II 188.
Magic Software
AutoSave II
BACKMATIC CALL
POWERICONS CALL
PUVERIOUNS CALL



#### **Business Hours**

Our phone lines are open for orders:

8am to 1am Eastern Time 5am to 10pm Pacific Time Sat & Sun 9am to 9pm Eastern Time 6am to 6pm Pacific Time

Customer Service & Tech Support

Mon - Fri: 11am to 7pm Eastern Time 9am to 4pm Pacific Time

#### **Ordering Information**

We accept VISA, MASTERCARD, DISCOVER CARD, AMERICAN EXPRESS & OPTIMA Card No surcharge added.









- If we must ship a partial order, we never charge freight on the shipments that complete the order (U.S. only). Your credit card will not be charged until products ship.
- All U.S. shipments insured at no extra charge.
  Most personal and company checks clear immediately on receipt to insure shipment. Allow one week for checks over \$1,000.
  Government, School and Institutional PO's clear immediately
- (some corporate accounts require credit approval).
  No sales tax (except WA residents add 8.1% to total incl. shipping)
- All prices subject to change without notice.
- All items subject to availability

#### Shipping Information USA Only

- All orders add \$3.00 per order. We ship all items Airborne Express overnight service. (Areas not serviced by Airborne will be sent U.S. Postal service or UPS.)
- Postal service or UPS.)
  Orders placed by 7:30pm Eastern Time, 4:30pm Pacific Time
  (weekdays) for "in stock" Items ship same day (barring system
  failure, etc.) for overnight delivery.
  APO/FPO/PD Box orders shipped 1st class mail, charged by
- weight. Alaska, Hawali orders ship UPS 2nd day air.

#### International Orders (Tel. 206.883.3088)

- We accept VISA, MASTERCARD, AMERICAN EXPRESS & Bank

- We accept VISA. MASTERCARD, AMERICAN EXPRESS & Bank checks in U.S. funds;
  We ship anywhere in the free world, using the quickest & least expensive methods possible.
  Orders are shipped by Alforme International. Postal Service, TNT SkyPack & UPS, please specify, Freight charged by weight.
  If payment is made by check, please include adequate shipping charges, we will refund you the difference.
  Hems in stock ship immediately. Hems not in stock back ordered unless otherwise notified.
- unless otherwise notified.
- Some product restrictions apply.

  When ordering by mail or FAX please include phone# & FAX#.

  All credit card orders must include shipping address & address to
- which your credit card bills come.

#### **Electronic Orders**

- E-Mailyour orders or questions to us via Compuserve (73667,3636), GEnie (MACZONE) or Connect (MACZONE).
- MacZone uses CE Software's QuickMall to check our mall hourly

- Defective software replaced immediately. Hardware replaced or re-
- Mac Zone has a 30 day money-back guarantee on hardware (USA
- Software and hardware is subject to manufacturer's warranty. De-
- fective items will be replaced immediately with like item(s). All hard drives come with a Zoner Loaner guarantee. Loan drives subject to availability (USA Only).
- All returns must have an authorization number. Call 800-248-0800.

o:1990 Multiple Zones International
The MacZone is a trademark of Multiple Zones International
This ad was created in PageMaker™ by the MacZone advertising department and
output to a Lindstonio 300.



Intl: (206) 883-3088 Canada: 800-248-0344 FAX (206) 881-3421 MacZone 18005 NE 68th St., Suite A110, Redmond, Washington 98052 USA

MacPaint 2.0.

MacProject II 2.0 ...... 368.

..w/MacDraw II Bundle368.

SmartForm Designer .. 294.



For overnight delivery, phone the Zone



#### Beagle Bros., Inc.

Fastest, friendliest way to transfer files over AppleTalk. Transfers are done the Mac way - with folders. To send files to Joe, drop them in a folder named "To Joe" and they'll be sent in the background while you work, even across network zones. One set will serve an unlimited number of users per zone.

FLASH ......\$119.



#### ALTRA

Acompletely new design in pointing devices. Designed to be used with the fingers, using the same motion as writing with a pen. The optical measurement system combined with the onboard micro processor enables Felix to provide unmatched ease of use and pointing control.

Felix ......\$125.



#### Letraset

The 'power' page design tool for the creative professional, built with the designer in mind. Created specifically for graphic arts professionals. From concept to mechanicals, DesignStudio gives you the comfort of your own environment with all the power of electronic typesetting and design.

DesignStudio ......\$618.



#### Mainsta

Schedule development software, now in color! Helps you create clear, graphic schedules...fast! Schedules that took hours to draw now take only a few minutes.

Draw flowcharts up to ten times faster than with drawing programs or pen and pencil. Graphically organize even complex programs, projects and structures, fast!

MacSchedule \$149. MacFlow \$125.





Mainstay	
Capture 2.0	48.
MacSchedule 2.0	149.
MacSchedule 2.0 Think N Time	. 55.
V.I.P	87.
MECA Ventures Inc. Managing Your Money	122
Medianenic	
Focal Point II	116.
Reports 1.2	. 68.
Microcom Software Carbon Copy Mac	110
Micro Planning Softwar	
Micro Planner Plus 6.16	)
	359.
Microlytics Cotor 2.0	44
GOfer 2.0 WordFinder	34
Microseeds	
INIT Picker	
Screen Gems	. 49.
WristMac Standard	144.
WristMac Pocket	178.
WristMac Executive	188.
Microsoft CD-ROM	599
Excel 2.2	245.
File 2.0	125.
Office	525. 249
Quick BASIC 1.0 Word 4.0	. 65.
Word 4.0	245.
Works 2.0b	77
Write	
Mail Server 2.0	248.
1 Workstation 20 Workstations	968.
Monogram	
Dollars & \$ense	. 78.
Niles and Associates EndNote	Δ1.1
Nolo Press	MLL
For The Record	
Will Maker 3.0	. 32.
Double Helix III	337
Double Helix IIIDouble Helix Multiuser	315.
GeoQuery 1.0	197.
Olduvai Software MultiClip	40
Plus 1 1	114
Read-It! 2.1 Read-It! Personal	244.
Read-It! Personal	124.
On Technology On Location	CALL
Paracomo	MLL
Milo	157.
Milo	374.
Paragon Courseware	296.
Nisus 2.02	236.
Nisus 2.02	236. 104.
QUED-M	104.
Nisus 2.02	104.
Nisus 2.02	104. 198. 54.
Nisus 2.02 QUED-M Personal Bibliographic ProCite PLI Software Turbo Back Turbo Cache	104. 198. 54. 68.
Nisus 2.02 QUED-M Personal Bibliographic ProCite PLI Software Turbo Back Turbo Cache	104. 198. 54. 68.
Nisus 2.02 QUED-M  Personal Bibliographic ProCite  PLI Software Turbo Back Turbo Cache Turbo Optimizer Turbo Spool Turbo Bundle (all above	104. 198. 54. 68. 38. 68.
Nisus 2.02 QUED-M Personal Bibliographic ProCite PLI Software Turbo Back Turbo Cache Turbo Optimizer Turbo Spool Turbo Bundle (all above	104. 198. 54. 68. 38. 68.
Nisus 2.02 QUED-M  Personal Bibliographic ProCite  PLI Software Turbo Back Turbo Cache Turbo Optimizer Turbo Spool Turbo Bundle (all above	104. 198. 54. 68. 38. 68. .)
Nisus 2.02 QUED-M Personal Bibliographic ProCite PLI Software Turbo Back Turbo Cache Turbo Optimizer Turbo Spool Turbo Bundle (all above	104. 198. 54. 68. 38. 68. 68.
Nisus 2.02 QUED-M  Personal Bibliographic ProCite ProCite Turbo Back Turbo Cache Turbo Optimizer Turbo Spool Turbo Bundle (all above  Portfolio Systems Dynodex Instant Addres	104. 198. 54. 68. 38. 68. 68.

Letter Writer Plus .......52.

DAtabase	67.
Exposure	51.
Vantage	51.
Prescience Expressionist:	203 78
Theorist	
Pro Plus Softw	are
Wall Street Inv	estor 447.
Prometheus	4.47
Macknowledge	147.
ProVUE Panorama 1.5	247
Quark	
QuarkExtras	55.
QuarkStyle	164.
XPress 2.12	469.
200000	
1	1
HOUSE	
Hiloso	Phone II
	A STATE OF THE STA
Missanhana II	POSE
Microphone II Software Ventu	LIVO VIII PARTY
Eddy Award ho	norable men-
tion. Top of the	
computer con software.	munications
SUITWAIG.	
Reference Soft	ware
Grammatik IV	
Sabastian Soft	ware
Image Grabber	2.031.
Satori	Aug
Bulk Mailer Plu	
Select Micro S	ystems
Exstatix 1.2 MapMaker 4.0	239
Silicon Beach	
Digital Darkroo	m248.
Super 3D	313.
Super Card	
SuperPaint 2.0 SmethersBarns	
ProtoTyper 2.1	
Software Innov	ations
HandOff	31.
Software Ventu	ires
Microphone II	3.0 215.
Solutions	400
backFax Curator	
SmartScrap &	Clipper 45.
Super Glue II .	61.
Somak	
Script Edit	
SuperMac Soft	ware
Disk Fit 1.5 Network Disk I	it 224
PixelPaint 2.0	222.
PixelPaint Pro	388.
Sentinel 2.0	86.
SuperSpool 5.	J 38.
Single User	86.
Multi User (1 t	0 5) 285.
Survivor Softw	are
Invoice It	49.
MacMoney 3.5	58.
Symantec Just Enough P	ascal 40
Think Pascal 3	.0 99
More II	268
S.A.M. 1.5	67.
S.U.M. II Think C 4.0	165
, U T.U	

Symmony
Acta Advantage 64.
HyperDA 1.248.
Key Plan245.
Distance Paradio 51
Picture Base 1.254.
Synergy Software
Synergy Sunware
KaleidaGraph 2.0 145.
Versa Term 4.0 88.
Versa Term Pro 3.0 174.
Synex
MacEnvelope78.
iviactivelope
MacEnvelope Plus 218.
T/Maker
WriteNow 2.2118.
Tactic Software
ArtClip 1st Ed50.
ArtClin 2nd Ed 64
ArtClip 1st Ed
Artronts 1, 2 & 3 ea. 54.
ArtFonts Pak
FontShare 148
land the manner of the same of
Sound Clips 1 & 2 ea. 48.
Sound Clips 1 & 2 ea. 48.
TGS Systems
Prograph 129.
TimeSlips Corporation
TimeSlips III168.
The second of th
Timeworks
Publish It!
TOPS
DOS Administrator 215.
DOG Administrator 215.
Mac Administrator 215.
InBox 3.0/ + Macintosh 628.
TOPS (DOS Version) . CALL
TOP S (DOS VEISION) . CALL
TOPS Network Bundle (Mac
Version)
TODE NotPrint 2.0 117
TOPS WEIFTIIN 2.0 117.
Traveling Software
Lan Link Man Dalance III
Lap-Link Mac Release III
Connectivity Pack 113.
Las List Man Dalassa III
Lap-Link Mac Release III
Network Pack CALL
Network Pack CALL
Network Pack CALL Trendware
Network Pack CALL Trendware
Network Pack CALL Trendware XCAL
Network Pack CALL Trendware XCAL
Network Pack CALL  Trendware  XCAL
Network Pack CALL  Trendware  XCAL
Network Pack CALL   Trendware   XCAL
Network Pack CALL   Trendware   XCAL
Network Pack CALL   Trendware   XCAL
Network Pack CALL   Trendware   XCAL
Network Pack CALL  Trendware  XCAL
Network Pack CALL  Trendware  XCAL
Network Pack CALL  Trendware  XCAL
Network Pack
Network Pack CALL   Trendware   XCAL
Network Pack
Network Pack CALL   Trendware   XCAL
Network Pack





#### Custom Applications

Eddy Award winning best software product of the year. The software solution to desktop publishing's most common problem. Turns many printers and imaging devices into PostScript language compatable printers to give you the professional quality text and graphics output you

Freedom of Press® .....\$264.



Insight Development Print any Mac application on many different printers. Chooser level program, completely transparent in operation. Select the printer only once on a simple setup page. Everything else is automatic. Print text and graphics at your printer's maximum resolution. Supports HP LaserJet II & IID.

MacPrint 1.2 ......\$94.



#### Macintosh Memory **Upgrades**

Does your computer just nibble at it's work? Put some teeth in your mother board. One megabyte SIMMs (for Mac Plus, SE, SE/30, II, Ilx, Ilcx & Ilci) are easy to install, especially since we include complete installations instructions. It's time to give your Mac the RAM it needs to take

#### The MacZone

A truly professional looking notebook for protecting and keeping track of your valuable information on 3.5" floppy disks. Plenty of space for twenty disks. A secure velcro fastener keeps it closed and your disks in place. About the same size as a notebook and just as easy to take with you.

Leatherette Disk Notebook ......\$12.



#### Digital Vision

Finally - an inexpensive way to capture real-world full-color images on your Macintosh color display for use in presentations, desktop publishing, im-age databases, slide shows, etc. Connects the Mac II to any standard video source and acquires high-quality images under simple software control

Computer Eyes ......CALL

Xerox (Datacopy)	
AccuText	545.
Zedcor Inc	
DeskPaint/DeskDraw	64.
ZBasic 5.0	88.

#### HARDWARE

#### Scanners

Complete PC Half Page Scanner/400 314. Page Scanner ......758. Scan Man ......318. Thunderware Lightning Scan .......... 368. ThunderScan 5.0 ...... 184.

#### Modems

**Fuerex** EMAC MD2400 ...... 224. MacTech - SmartLink Modem 2400m (MNP 5) ......245. 2400s ......139. Prometheus 9600m Plus V.32 ...... 768. Shiva Corporation NetModem V2400 ...... 434. Supra Corp. Supra Modem 2400 .... 128. U.S. Robotics 9600 HST Baud ...... 685.

#### Monitors & Cards

Micron Color Cards for SE/30, II, IIx, Ilcx, & Ilci Xceed (8 Bit - 13") ...... 385. Xceed (8 Bit - 19") ...... 598. RasterOps Trinitron 19" Monitor 3,398. **ColorBoards** 108+ (II, IIx, IIcx, IIci) . 899. 264 (SE/30 - 13") ..... CALL Sony - Color Multiscan

14" 1304 HG Color ..... 795.

#### Accelerators & Upgrades

MacSnap Upgrades

Dove

524 (512k to 1 Mb) ..... 192. 524e (512kE to 1 Mb) . 185. 524s (524e w/SCSI) ... 238. 548 (512k to 2 Mb) ..... 432. 548e (512kE to 2 Mb) . . 418. 548s (548e w/SCSI) ... 478. SCSI Port Adapter ..... 109. Marathon 020 SE Accelerators MSE1 (Board Only) ..... 428. MSE2 (...w/1 Mb) ...... 698. MSE3 (...w/68881) ..... 588. MSE4 (...w/68881 & 1Mb) 898. Marathon 030 Accelerators Mac II series or SE/30 .....ea. 965. Marathon Racer ...... 148. Marathon 030 Upgrade Mac Plus, SE, & II .... CALL Macintosh Memory Upgrades available in 70ns - 120ns 256k SIMMs..... 1 Mb SIMMs Call for prices

Motorola	
Math Co-Processors	
68882 - 16MHz	289.
68882 - 25MHz	399.
68882 - 33MHz	695.
68882 - 40MHz	748.



SmartLink 2400S .... \$139. SmartLink 2400M ... \$245.

2400 baud modem, Bitcom communications software. and Mac to modem cable in one complete package.

Orchid Technology Mac Sprint II ..... 249. Total Systems Gemini 020/030 Accelerators 68020 SE - 16MHz .... 697. 68020 SE - 25MHz ... 1,118. 68030 SE - 16MHz .... 976. 68030 SE - 20MHz ... 1,118. 68030 SE - 25MHz ... 1,285. GemKit (allows user to put Gemini 020/030 Accelerators in Mac+, 512kE, 512k, & 128k. Includes internal fan, SCSI port, and space for ex-

#### tra RAM memory) ...... 149. Backups & HD Drives

Everex - EMAC Drives 60/60dtl Deluxe ...... 1,495. 60t (Tape Backup) ...... 658. Impact Tape (150 Mb) 985. PLI (Peripheral Land, Inc.) TurboFloppy 1.4 ...... 358.

#### Networking Hardware

Cayman Systems

Gator Box ......2,159. Gator Mail Gateway .... 698. Gator Mail to Unix ...... 698. Gator Share Software 1.398. Gator Card (Mac SE, II, IIx, IIcx, IIci, or SE/30)ea. 460.

Dove FastNet Equipment

FastNet Edupment 1,249.
FastNet SE or SE/30 ... 374.
FastNet III ... 374.
FI-1 Ethernet LAN/68020 Accelerator SE ...... 995 SCSI CheaperNet ...... 748. SCSI Thickwire Ethernet Farallon - PhoneNet DB-9 ......31. DIN-8 (10 Pack) ....... 198. Star Connector ...... 17. Star Connector (10 Pack) Repeater ...... 312.

Kinetics FtherPort MacTech

NuvoLink SC ......319.

Nuvotech

ZoneNet - DB-9 or DIN-817.

Turbo Net - DIN-8 ......21. Turbo Net ST - DB-9 ..... 30. Turbo Net ST - DIN-8 .... 30. Shiva Corporation EtherGate ...... 1,824. NetBridge 338. NetSerial 274. TeleBridge ......338. Flash Card (TOPS Dos) 158. TOPS FlashBox ............ 122. TOPS Repeater ..... Miscellaneous Aapps Corporation Micro TV ........288. DigiVideo ......CALL

Abaton InterFax 12/48 ...... 264. InterFax 24/96 ...... 418. American Power Conversion UPS 110SE ..... 268. Dayna Communications Dayna Talk Connector ... 99. DaynaFile - Dual Drive Df0102 (360k/1.2Mb) . 729. Df0103 (360k/720k) ... 729. Df0104 (360k/1.44Mb) 748. Df0204 (1.2Mb/1.44Mb) **Fortis** DM1310 Printer ......235. Ribbon ...... 6.

Cordless 4 Button Cursor 8.5" x 11" (w/Stylus) ... 254. 12" x 12" (w/Stylus) ... 384. 12" x 17" (w/Stylus) ... 624. NEC CD ROM Drive

Kurta - Is/ADB Tablets

Orange Micro Grappler C/Mac/GS ...... 78. 

Mac 286 NuBus Card 1,099. Mac 86 NuBus Card .... 498. Orchid Technology Orchid Fax Modem ..... 446. PCPC (8mm Tape Backup)

Jetstream ......4,725. Summagraphics Bit Pad

12" x 12" Tablet - ADB . 315.

#### ENTERTAINMENT

Access Software World Class Leader Board Accolade 4th & Inches ......26. Hardball ......25. Mean 18 ......25

of the Direct Marketing Association, Inc.



# Ask about product money back guarantees



#### Aapps Corporation

Gives users the same desktop real-time video & TV as the original MicroTV board. Offers a large (3" x 3.5") screen option as well as the original (1.5" x 1.8") screen and a HyperCard based construction kit with ready to paste buttons for incorporating real time video into most HyperCard stacks.

D	in	ıi	V	id	e	1.		Jan.	uens					 	CA	L	L



#### Casio

Casio B.O.S.S. (Business Organizer Scheduling System) includes business card library, phone directory, memo function, calendar, scheduling and alarm features. And when coupled with your Mac, CASIOLink lets you transfer information to and from your Mac, wherever and whenever you need it.

Casio B.O.S.S.../CASIOLink ....... CALL



#### Reference Software

This full featured grammar & style checker can help anyone improve their writing. Finds thousands of common errors by parsing a sentence, comparing each word against a complete collection of writing rules, and lets users fix them immediately. Answers most grammar & style questions.

Grammatik Mac IV\$52	G	rammatik	Mac	IV	\$52
----------------------	---	----------	-----	----	------



#### Freesofi

Successor to legendary Red Ryder telecommunications program. Added new features list alone runs over 20 pages (including background & MultiFinder compatability)! For a limited time, comes bundled w/Okyto (Mac-to-Mac file transler program) & free subscription to GEnie.

White Knight 11 ......\$84.





Activision	
Cosmic Osmo	.40.
Manhole	28.
Manhole CD Version  Addison Wesley	. 34.
The Hobbit	26.
Fellowship of The Ring . The Shadows of Mordor	26.
The Shadows of Mordor	26.
The Crack of Doom	. 26.
Ancient Art of War	25
Ancient Art of War at Se	a
	25.
PlayMaker Football Shufflepuck Cafe	29.
SimCity 1.1	28.
SimCity 1.1	.47.
Star Wars Where In Europe Is Carr	.23.
Sandiego?	28
Sandiego? Where In The U.S.A. Is	
Carmen Sandiego? Where In The World Is	. 28.
Carmen Sandiego?	28
Bullseye Software	. 20.
Ferrari Grand Prix	.31.
P-51 Mustang Flight	
Simulator	
Casady & Greene Crystal Quest 2.2	24
w/Critter Editor	39.
Centron	
Casino Master B & W	.44.
Casino Master Color	. 49.
Data East Super HangOn	26
Electronic Arts	. 20.
Bard's Tale	.30.
Chessmaster 2100	.32.
Chuck Yeager's A.F.T Might & Magic II	30.
Panzer Battles	28.
Panzer Battles Patton Vs Rommel	
	.14.
Starflight	. 14. . 39.
Infocom	. 39.
Infocom Arthur: Quest for Excalib	. 39. nur
Arthur: Quest for Excalit Quarterstaff	. 39. nur
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design	. 39. our . 28. . 28.
Infacom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones	. 39. our . 28. . 28.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones	. 39. our . 28. . 28.
Infocom Arthur: Quest for Excalib Quarterstaff	. 39. our . 28. . 28.
Infocom Arthur: Quest for Excalib Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic	. 39. . 28. . 28. . 25.
Infocom Arthur: Quest for Excalib Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai	. 39. . 28. . 28. . 25.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports	. 39. our . 28. . 28. . 25. . 19.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II	. 39. our . 28. . 28. . 25. . 19.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports	. 39. nur . 28. . 28. . 25. . 25. . 39.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft	. 39. . 28. . 28. . 25. . 19. . 39. . 35.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02	. 39. . 28. . 28. . 25. . 19. . 39. . 35.
Infocom Arthur: Quest for Excalib Quarterstaff Inline Design Bomber (w/Headphones  Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02  Miles Computing	. 39. . 28. . 28. . 25. . 25. . 39. . 35. . 31.
Infocom Arthur: Quest for Excalib Quarterstaff Inline Design Bomber (w/Headphones  Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02  Miles Computing	. 39. . 28. . 28. . 25. . 25. . 39. . 35. . 31.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02	. 39 28 28 25 25 39 31 31 31 31.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscane	. 39 28 28 25 25 39 35 31 31 31 26.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker	. 39 28 28 25 25 19 35 31 31 31 26 19.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony	.39282825253935313126192828.
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony Crossword Magic	.392828252539353131312628282828282828
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony Crossword Magic Deja Vu II	.39. 28. 2825193531312619282828282828282
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Microsoft Firand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony Crossword Magic Deja Vu II Gauntlet	.392825251935312619282828282828282
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony Crossword Magic Deja Vu II. Gauntlet Shadowgate Trust & Betrayal	.39392828253131312628282828282828
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony Crossword Magic Deja Vu II Gauntiet Shadowgate Trust & Betrayal Uninvited	.39392828253131312628282828282828
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony Crossword Magic Deja Vu II Gauntlet Shadowgate Trust & Betrayal Uninvited Origin Systems	.3939282825393531312628282828282828
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony Crossword Magic Deja Vu II Gauntlet Shadowgate Trust & Betrayal Uninvited Origin Systems Autoduel Moebius	.39282825193531312619282828282828282
Infocom Arthur: Quest for Excalit Quarterstaff Inline Design Bomber (w/Headphones Lucasfilm Pipe Dream Mediagenic Shanghai Micro League Sports MicroLeague Baseball II MicroProse Pirates! Microsoft Flight Simulator 1.02 Miles Computing Fool's Errand Harrier Strike Mission II Puzzle Gallery Mindscape Aussie Joker Poker Balance of Power 1990 Colony Crossword Magic Deja Vu II Gauntlet Shadowgate Trust & Betrayal Uninvited Origin Systems Autoduel	.39282825193531312619282828282828282

Citadel .....

1	Premier Technology	Learning Co.
40.	NetTrek	Math Rabbit
28.	Strategic Conquest 2.0 33.	Reader Rabi
54.	Shodan Leprechaun29.	Nordic Alphabetizer
26.	Silicon Beach Software	BodyWorks
. 26.	Apache Strike 1.1 19.	ClockWorks
r 26.	Beyond Dark Castle 19.	CoinWorks
26.	Dark Castle19.	EarthWorks
	Software Toolworks	FlashWorks
25.	Cribbage King/Gin King . 38.	Lemonade S
a	Hunt for Red October 20.	MacKids Pre Naval Battle
25. 29.	Life & Death31.	Preschool D
22.	C. P. DAGE V.	Preschool D
28.		Turbo Math
47.		Word Quest
23.	4	Word Search
men		Penton Over
28.		VocabuLearn/ French Leve
28.	A Second	French Leve
20.		German Lev
. 28.		German Lev
	Prograph\$129.	Italian Level
31.	TGS Systems Eddy Award winning pro-	Italian Level
	gramming tool. Object-ori-	Japanese Le
30.	ented language with many	Japanese Le
	uses for programmers and	Spanish Lev Spanish Lev
24.	nonprogrammers alike.	Personal Tra
39.	Sphere	Learn88 Train
11.00	Falcon 2.230.	A1 Beginnin
44.	Gato 1.4	A2 Int. Illust
49.	Pt-10925.	A3 Creating
00	Solitaire Royale19.	A4 Prec. Dra
26.	Tetris (Color Version) 20.	MacTeach Tra
30.	WelltrisGALL	The Basics B1 Plus & S
32.	Spinnaker	B2 Plus & S
30.	Sargon IV298.	B3 020 & 03
38.	Strategic Simulations, Inc.	B4 Beyond t
28.	AD&D: Pool of Radiance 32.	Learn Freehar
14.	Strategic Studies Group	Series
39.	American Civil War CALL Halls of Montezuma 30.	FH1 Beginni FH2 Int. Free
la cons	Three Sixty	FH3 Creating
bur 28.	Sands of Fire34.	FH4 Prec. D
28.	Warlock28.	Learn FileMak
	Toyogo, Inc.	Series
s)	Nemesis Go Master 48.	FM1 Beginn
25.	Nemesis Joseki Tutor 29.	EMO Int File
	XOR Corporation	FM2 Int. File FM3 Advance
25.	Lunar Rescue32.	FM4 Tips &
	Mac Racquetball 36.	HyperEasy Tr
19.	MacCourses19.	H1 Using Hy
	MacGolf	H2 Creating
1 39.	NFL Challenge54.	H3 Basic Sc
	Pro Challenge28.	H4 Advance
35.	Road Racer37.	Learn Persuas
	TaskMaker26.	Series
31.		LP1 Beg. Pe
	EDUCATION	LP2 Int. Per
31.	LDOCATION	LP3 Creating
1 31. 26.	Bright Star Technology	MasterWorks
	Alphabet Blocks 29.	M1 Databas
19.	Talking Tiles26.	
.28.	Brøderbund	M2 Advance
28.	Calculus	M3 Spreads
28.	Geometry	M4 Word Pr
28.	Type!17.	PageTutor Tra P1 Beginnin
24.	Carina	, , Deginini
28.	Voyager 1.2 88.	P2 Int. Page
28.	Davidson & Associates	P3 Tips & Ti
erate de la constante de la co	Math Blaster25.	P4 Advance
26.	First Byte	
23.	Dinosaur Discovery Kit . 26.	
30.	Great Wave Software	MEMBER
0.7	KidsMath25.	
27.	KidsTime24.	
	Number Maze25.	

Loamina Campany
Learning Company Math Rabbit
Math Rabbit
Nordic
Alphabetizer
ClockWorks27.
CoinWorks27.
EarthWorks27.
FlashWorks
Lemonade Stand 27. MacKids Preschool Pack36.
Naval Battle27.
Naval Battle
Preschool Disk 227.
Turbo Math Facts 27. Word Quest 31.
Word Search27.
Penton Overseas
VocabuLearn/ce
French Level 129. French Level 229.
German Level 1 29
German Level 129. German Level 229.
Italian Level 129. Italian Level 229.
Italian Level 229.
Japanese Level 1
Spanish Level 129.
Spanish Level 229.
Personal Training Systems
Learn88 Training Series
A1 Beginning Illustrator 36. A2 Int. Illustrator 36.
A3 Creating Special FX 36.
A4 Prec. Drawing Tech. 36.
MacTeach Training Series -
The Basics B1 Plus & SE w/out HD . 36. B2 Plus & SE w/HD 36.
B2 Plus & SE w/HD36.
D3 UZU & U3U W/ND30.
B4 Beyond the Basics 36.
Learn Freehand Training Series
FH1 Beginning Freehand 36.
FH2 Int. Freehand 36.
FH3 Creating Special FX 36.
FH4 Prec. Drawing Tech.36. Learn FileMaker Training
Series
FM1 Beginning FileMaker
FM3 Advanced FileMaker36.
FM4 Tips & Techniques 36.
HyperEasy Training Series H1 Using HyperCard 36.
H2 Creating Cards/Stacks
36.
H4 Advanced Scripting . 36.
Series LP1 Beg, Persuasion 36. LP2 Int. Persuasion 36. LP3 Creating Templates 36. LP4 Creating Artwork 36. LP4 Meeter Teiging Series
LP1 Beg. Persuasion 36.
LP2 Int. Persuasion 36.
LP3 Creating Templates 36.
MasterWorks Training Series
MasterWorks Training Series M1 Database & Form Let.
36. M2 Advanced Database 36. M3 Spreadsheets 36. M4 Word Processing 36.
M2 Advanced Database 36.
M4 Word Processing 36
Page Lutor Training Series
P1 Beginning PageMaker
P3 Tips & Techniques36.
P4 Advanced Features 36.





Portfolio Systems

The Instant Address Book™. Fast on-line personal database that elegantly print double-sided address pages for Filofax and most organ-izer systems. Includes "no-fuss" laser paper and powerful database functions like find, sort, se-lect, dialing, import, export, merge, and much

Dynodex ......\$96.



A well padded bag with plenty of room for your Mac, keyboard, mouse, hard disk, cords and cables. Nylon material and extra heavy duty construction makes the Targus bag the ideal way to safely transport your Macintosh ImageWriter to wherever vour business takes you.

Targus Bags .....see listings



Swivel 3-D: Eddy Award winning 3-D graphics program.

#### Electronic Arts

Studio/8: versatile 8-bit color paint program for Mac II family.

#### SPECIAL OFFER:

Buy both Swivel 3-D and Studio/8 and get Studio/ 1 (b&w paint & animation software) for FREE!

Swivel \$298. Studio/8 \$298. Bundle \$586.



The new Fujitsu 3.5-inch, 800k disk drive can help you enjoy a lot more of a good thing. Namely your Mac. No matter how you decide to configure it, the Fujitsu drive can be taken from the box and in-stalled in minutes. Comes with manual eject button, LED operation in-dicator, 1 year warranty.

800k External Disk Drive ......\$159.



A relational database for managing Contacts, Activities, and Time. Keeps detailed list of contacts organized by accounts and linked to appoint-ments. Timer included for scheduling and tracking activities. Track time spent in meetings or projects and record that info for use on reports.

LearnWord Training Series	
W1 Beginning Level	.36
W2 Intermediate Level W3 Advanced Level	30
W4 Additional Features	36
Excellerate Training Series	
XL1 Beg. Spreadsheets	36
XL2 Int. Spreadsheets	36
XL3 Adv. Spreadsheets	.36
XL4 Creating Bus. Graph	15
XL5 Building Databases	36
XL6 Beginning Macros	36
XL6 Beginning Macros XL7 Advanced Macros	36
XI 8 Macros for Excel 2:	2
XL9 What's New for 2.2	36
XL9 What's New for 2.2	36
Simon & Schuster	nc
Typing Tutor IV	20
Software Toolworks M. Beacon Teaches Typi	na
W. Deacon reaches Typi	
Spinnaker	
Typing Made Easy	25
True BASIC, Inc.	
Algebra	31
Arithmetic	31
Calculus	31
Discrete Mathematics Pre-Calculus/Trig	31
Probability Theory	31
TrueSTAT	31
Combo Packs w/Workbook	K
Algebra Combo Pack	44
Calculus Combo Pack	
Pre-Calculus Combo Pag	:K

#### MUSIC

Ars Nova	
Practica Musica	68.
Bogas Productions	
Studio Session	44.
Super Studio Session	64.
Brass, Country, Heav	y
Metal, Sound Effects,	
Quartet ea	ich 13.
Brøderbund	
Jam Session	28.
Coda	
Finale 2.0	
Mac Drums	
MusicProse	
Perceive :	49.
Electronic Arts	
Dlx Music Const. Set	
Deluxe Recorder	98.
Farallon	-
MacRecorder 2.0	
Mark of The Unicorn	La La Properties
Professional Compos	
Professional Perform	er394.
Passport Designs	
Click Tracks	309.
MasterTracks Jr MasterTracks Pro 4.0	
MIDI Interface	
MIDI Transport	
Note Writer II	320
Primera Software	010.
Different Drummer	58
Resonate	
Listen 2.1	61
LIGIOTI E. I	

#### **ACCESSORIES**

#### Abaton Pro Point ADB (SE & II) 79. Addison Wesley Inside Macintosh, Vol. 1 19. Inside Macintosh, Vol. 2 19. Inside Macintosh, Vol. 3 17. Inside Macintosh, Vol. 420. Inside Macintosh, Vol. 5 22. Inside Macintosh, X-Ref . 8. Macintosh Programming Secrets ......19. Advanced Gravis MouseStick ...... 64. MouseStick (ADB) ...... 84. Felix ...... 125. Apple MacTerminal ......99.



LaserWriter Plus Series 96.

Toner Cartridges LaserWriter II Series ..... 99.

Eddy Award winning math/ statistics program from the makers of Expressionist. Intuitive mathematics and equations made easy.

#### Avery I shele

Avery Labels
Address Labels
2.5" x 15/16" (3000) White
12.
3.5" x 15/16" (1000) White
5.
3.5" x 15/16" (3750) White
3.5" x 15/16" (500) Clear 13.
Diskette Labels
2.75" x 2.75" (250) White
2.75 X 2.75 (250) WILLE
Mac Disks (630)29.
3.5" (80) Color Coded 4.
File Folder Labels
3.5" x 7/16" (1000) Asst. 7.
3.5 X // 10 (1000) ASSL. /.
Laser Printer Labels
1" x 2-5/8" (3000) White 16.
1.5" x 4" (1400) White 18.
1/2" x 1.75" (2000)7.
Laser Transparencies (50)
Round 1.5" (300) White 7.
Bantam Books
Illustrator 88 Handbook 19.
Mastering Wingz21.
HyperCard Handbook 22.
Casio
Casio B.O.S.S CALL
CasioLink/MacCALL
Datadesk
Hyper Dialer29.
Mac 101 Keyboard 138.
Switchboard CALL

Datashield MacDirector89.
Ergotron MacTilt
Fujitsu 800k Disk Drive 159. Golden Ribbons
Multi Colored
Goldstein & Blair Macintosh Bible19. Kalmar Designs
Teakwood Disk File Cabinet           45 Disks         14.           90 Disks         21.
135 Disks30.  Kensington Microware  Apple Security Kit System
34. Dust Cover Mac SE8.
Mac II Stand
System Saver Mac 63. Tilt Swivel
Turbo Mouse108.
Keytronics Keyboard Mac Pro Kb-105 ADB 125. Kraft
QuickStick (512k & Plus)
QuickStick ADB49.  Mac Packs
Gray, Navy, or Wine
Gray, Navy, or Wine ImageWriter Bag
Mac Zone 7 Outlet Noise & Surge
Protector
Mouse Padseach 6.
SCSI Tester39. Mac Tool Kit Mac w
Grounding Strap 15.
Maxell Backup Tapes 150 Mb Tapes 24
150 Mb Tapes 24. 60 Mb Backup Tape 19. <b>Mobius</b>
Fanny Mac55.
A+ Mouse (512k & Plus)58.
A+ MOUSE ADD75.
Sony Backup Tapes DC 2000 40 Mb. Tape 19. Qd-600a 150 Mb. Tape
CALL
Sany Disks Double Sided (800k)
10 Pack
High Density (1.44 Mb)
10 Pack
Targus Bags Black, Gray, Navy, or Wine
Deluxe for Extended Kybd
68.

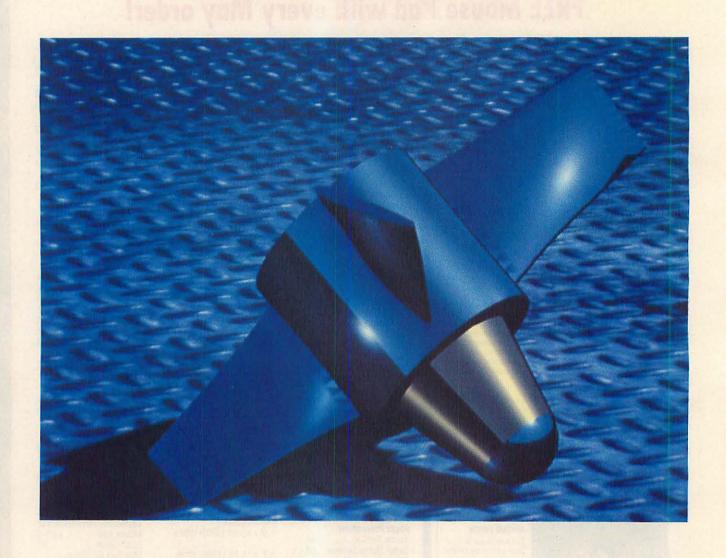
Where savings are huge and advice is free.



ImageWriter (Black only)45. Mac/SE Bag (Black only)54.

Ilcx/Ilci Bag .....

Intl: (206) 883-3088 Canada: 800-248-0344 FAX (206) 881-3421 Circle 70 on reader service card



Above: Artist, Ray Davis; software, CADKey Render, which uses RenderMan (on an IBM PC). Right: Artist, Koji Sonoda; software, SystemSoft. For more details, see "Rendering Face-off." Facing page: Artist, Tony Tomsu; software, Sculpt 3D.



# Get Realistic

AN INTRODUCTION TO RENDERING SOFTWARE—PROGRAMS THAT TURN 3-D GEOMETRY INTO PHOTOREALISTIC DISPLAYS

eeing, they say, is believing, and in most businesses it's necessary for people to believe with all their hearts before they'll invest money and time in a project. But how do you see something that doesn't yet exist? Or, in a different type of business, how do you create a believable illusion of something that never will or could exist? Answer: render.

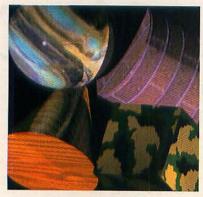
On the computer, rendering is the process of adding color, texture, the illusion of transparency or reflectivity, and other visual effects to 3-D models. Some people prefer to use computer rendering instead of traditional methods because they want a high-tech look. Others use it because of the efficiencies they can realize. For example, computer rendering has a lot to offer animators, who create many views of the same subject, or product designers, who must create many treatments of the same view.

Three-dimensional modeling software with shading capabilities of various types has been around on the Mac for some time, but falling memory

prices, faster Macs, and the advent of 32-bit color have only recently created an environment where true 3-D rendering is practical. In response, a number of companies have joined Visual Information—longtime maker of RayTrace Dimensions, until recently the only Mac rendering program—in this field. Now im-



ages produced by Mac software from Strata, MacroMind, Electric Image, Byte by Byte, and Pixar are beginning to show up everywhere from Disney Studios to the offices of Ford, ABC, and BBD&O.



Selections from the Library

These objects were ray traced in StrataVision and then mapped with textures from some of Strata's attribute libraries. Rainbow onyx comes from the Decorative Stone collection, while the oak texture comes from Wood Grain; the other two are from unreleased collections. Strata "attributes" are more than just PICT files; each includes gloss information and a bump map.



Private Eye

Robyn Miller modeled and rendered this scene in StrataVision using the program's mapping and raytracing abilities. He produced the louvered lighting effect by applying a louver-shaped map to his main light source. All rendering software shares the goal of being able to add realistic visual effects to 3-D models, but different programs approach this pursuit in very different ways. To understand the distinctions among Macintosh rendering packages, you will find it helpful first to get a grasp of the basics of 3-D imaging.

#### The Model

The illusions created by rendering software are, for the most part, only skindeep; the skeleton—the structure—is provided by the 3-D model. Computer modeling is the process of defining a graphic object in three-dimensional space (x, y, and z coordinates). When choosing a modeling program or method, it's important to select one that is appropriate to the type of object you'll be creating and to the rendering technique you intend to use.

There are three basic types of surface modelers. The simplest modeler creates wire-frame objects (not to be confused with wire-frame representation—any type of object can be viewed as a wire frame). Wire-frame models are the type produced by many CAD programs. They look like neon sculptures and are composed solely of intersecting lines. Each line is a separate object; they do not form surfaces that can be colored or shaded. Some programs, such as Dimensions Presenter, can translate wire-frame data into surface data appropriate for rendering. This is not, however, a trivial problem, and the results are unreliable. The translation process can be very timeconsuming, and complex models may not translate accurately.

A more complex type of model is made of flat polygons—small two-dimensional surfaces made of three or more straight lines, or edges. You can stretch and distort objects built out of these surfaces by moving control points, much like sculpting with a wire net. The facets of a polygonal model can be interpolated in rendering for a smooth appearance. Polygonal models describe curves better that wire frames and lend themselves to a wide range of surface and lighting treatments. This is the type of object most Macintosh 3-D programs produce.

The most sophisticated modelers are known as parametric, or simply

curved-surface, modelers. In these, the polygonal net becomes a mesh, known as a patch, with even more control points—four or more connected lines for each surface. The lines that form the edges of a patch are controlled by splines, which means that the surface of each patch can be curved.

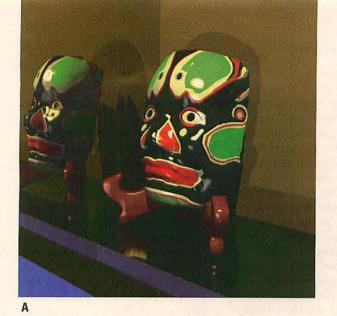
It follows that curved-surface modelers are the best at defining objects with complex curves. They can do this more efficiently than polygonal modelers, since it might take a polygonal modeler 50 or even 100 facets to reproduce the contours of one patch. On the other hand, curved-surface models are more computationally intensive, and the software used to create them is generally more complex to work with. Only a few Macintosh programs-such as Design Dimensions, Microstation Mac, and MacBravo Modeler—can produce parametric models. In general, this type of model is used only when extremely high quality or absolute accuracy is required, as in high-priced advertising or simulation.

Remember that all of these modeling techniques produce only shells, not solid objects. If you were to cut any surface model in half, the software would not know how to treat the new edge or the interior space. Solid modelers are a separate type of 3-D software (see "Beneath the Surface: The World of Solid Modeling," *Macworld*, March 1990). Of the renderers in this article, only Pixar's asyet-unreleased RenderMan engine is designed to handle solid models.

#### **Scene Description**

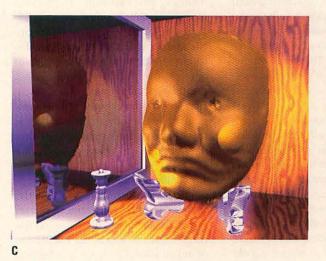
Once you've defined the 3-D objects that will be rendered, the next step is to organize them to describe a scene. This involves placing lights to illuminate the objects' surfaces and determining the view by choosing a camera position and lens type.

The camera in rendering is designed to mimic a real-world camera, with a lens through which light rays converge at a focal point and focus onto an image plane. The rendering programs let you change the field of view by either imitating different cine lenses (as in ElectricImage Animation System) or changing the view by degrees (as in Dimensions Presenter).









#### Rendering Face-off

To compare rendering software, *Macworld* sent copies of the same DXF model to five companies. The model was based on an actual Chinese mask, which we sent to Cyberware Laboratories of Monterey, California, where it was scanned using a Cyberware Rapid 3-D Digitizer. The mask stand was also scanned, and saved as a 3-D file.

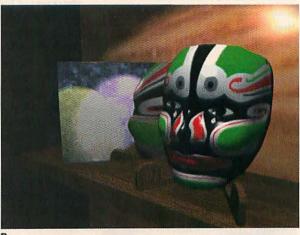
Along with the two DXF files, participating artists received a rough pencil drawing showing the mask's traditional colors and pattern, and a sketch showing how we wanted the scene framed and the desired placement—on a shelf in front of a mirror. The artists were given the option of re-creating the mask pattern or coming up with a surface treatment of their own.

The first image appears at the beginning of this article. (Page 136, bottom). Software: SystemSoft's scon-to-be-released modeler and renderer (see "Coming Attraction"). Techniques: Koji Sonoda used a random-pattern generator to produce the wall texture and marble; he then ray traced the scene on a

By and large you can position the camera anywhere in the scene.

The light sources in 3-D and rendering packages also mimic actual lighting possibilities. The three most common lighting types are ambient, directional, and radial. Ambient light is nondirectional, distributing light uniformly like sunlight on an overcast day. Directional light sources mimic the effect of spotlights, with their coneshaped spread, or direct sunlight, which has a distinct, parallel look. Radial lights illuminate from one spot but not in a specific direction, like a light bulb.

The color of objects is often determined not by painting but by assigning combinations of colored lights. Most programs offer the option to set multiple colored lights that can be positioned relative to your objects.



D

distributed network that ranged between five and nine Macs. The mask pattern is a wrapped PixelPaint file. (A) Software: Sculpt 3D. Techniques: Steve Speer ray traced the entire image after using Sculpt 3D's modeler to encode the mask pattern directly onto the DXF model. (B) Software: Dimensions Presenter. Techniques: Karl Mochel used computed patterns for the shelf and stand. He painted the mask pattern in Studio/8 and then wrapped the pattern onto the model. The scene was then ray traced. (C) Software: MacroMind Three-D. Techniques: Roy Santiago rendered the basic highlights and shadows using Phong shading. A reflection map combined with specular highlights produced the metallic effect. The wood is a scanned texture map. (D) Software: ElectricImage. Techniques: Jay Roth used texture mapping to produce all the effects. The wood in the shelf and holder are stock files from Studio/8. Roth painted the mask pattern in Photoshop. For a closer look at two of these images, see Art Beat, in this issue.

#### Rendering

Scene description sets the stage for the next step, which is rendering. Unlike traditional drawing, where all steps along the path toward producing a realistic representation are referred to collectively as rendering, in computer graphics rendering is the process of converting the numeric description of a scene into the individual color values of the display surface.



The Mountains of Mars
Using ElectricImage Animation System, Jay Roth
mapped Viking satellite photography onto a model
built from actual Mars surface-altitude data to
produce this realistic rendering of the Panovis
Mons volcano.





From the Inside Looking Out
Ray tracing isn't the only way to create realistic reflections. In environmental, or cubic, mapping, six views are taken from the point of view of the reflective object—in this case the teapot—and then wrapped around that object. Levels of reflectivity are established by setting a map's level of transparency.

Broadly speaking, there are three main rendering techniques: ray tracing, shading, and texture mapping (see "Marching toward Realism"). Computer artists and designers often use these methods in combination to create a desired look in the most economical way.

Ray Tracing Ray tracing is an exhaustive, automatic process for capturing shadows, highlights, and reflections. For

every pixel on the screen, a single imaginary ray of light is projected from the center of the camera into the scene and back. The software calculates the effects of all light sources as they interact with surfaces. These calculations take into account user-determined settings for reflectivity, refraction, and transparency.

Shading Flat shading, Gouraud shading, and Phong shading are familiar terms in 3-D graphic production. All rendering programs and many CAD and modeling programs offer these techniques. Like ray tracing, these shading methods are all illumination models; unlike ray tracing, they describe only the relationship between the surface shape of an object and the color and direction of its lighting. Thus, for example, objects rendered using these techniques have shading, but cast no shadows. Nor do shading techniques take surface characteristics into account.

Different shading methods will produce different effects. With flat shading, each facet of an object has the same color at all points. Abrupt changes in color often occur at the edge between one surface and another.

Phong shading interpolates the flat polygons so that edges are smoothed and shades progress from light to dark without shifts. When an object's surface has no abrupt shifts in contour, like a ball, Phong shading produces good results. But if the structure changes radically at an edge, a Phong shader may smooth the transition inappropriately.

Gouraud shading produces an effect that combines characteristics of flat and Phong shading. The edges of facets remain distinct, but the facets themselves are shaded smoothly from edge to edge.

Mapping Along with ray tracing and/ or shading, all the rendering programs covered in this article provide some option for texture mapping. In mapping, a 2-D PICT or other graphics file representing a desired texture, pattern, material, or other attribute is mathematically applied to an object. Programs that map generally offer three basic options (though the terminology may vary). Flat mapping is like putting a decal on a surface; this technique is used only for objects with relatively little curvature. The second type, often simply called wrapping, is like covering the object in saran wrap. No attempt is made to correct for distortion. In the third type, the program controls distortion by wrapping to a predefined geometric model. Typically, the designer must tell the program that the object in question is most like a sphere, cylinder, or other basic shape (see "Selections from the

By using different types of mapping, you can simulate most of the visual attributes of a ray-traced image. For example, reflection maps—as the name suggests-can create the illusion of reflectivity. To make a reflection map, you begin by taking a snapshot, as it were, of the scene surrounding the object to which you want to add a reflection. You then map the snapshot onto the reflective object. By setting the transparency of the reflection map, you can determine the degree of reflectivity for the object. Cubic, or environmental, mapping is a more convincing method of reflection mapping in which the program makes six separate views of the scene surrounding a reflective object. This unfolded cube view is then automatically mapped over the object's surface (see "From the Inside Looking Out").

Even though creating an environmental map requires some effort, it's still less time-consuming than ray tracing a scene, because you have the creative control of placing reflections only where you want them, adding only those needed to produce the desired level of realism.

Artists use another common type of texture map—bump maps—to create the illusion of relief. A bump map

is simply a PICT or other 2-D graphic file in which the highlights and shadows have been offset to give a 3-D, textural effect. Most surface-treatment type-rendering programs include facilities for creating bump maps. Mapping programs also have facilities that enable you to produce the illusions of shadows and glows, among other effects.

The non-ray-traced techniques just described all come under the rubric of surface simulation or surface treatments. A final form of surface simulation is exclusive to the RenderMan format, developed by Pixar.

#### RenderMan

One problem producers of 3-D graphics have had to contend with until now is that while formats exist for transporting 3-D geometry, there has been no common file format for scene description. Each modeling or rendering package has had its own way to specify lighting, camera position, and materials. This bars you, for example, from using a package on a PC to describe a scene and then porting it to a workstation for rendering.

By the time this article is published, however, many modeling and rendering packages will offer support for a standard created by Pixar, the former computer arm of Lucasfilm, now partly owned by Steve Jobs. The RenderMan standard uses the surface-treatment techniques just described as well as some unique methods to provide for very high quality, photorealistic rendering.

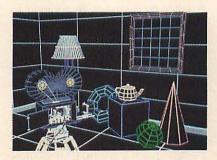
The Pixar system works like this: You create a model and describe the scene using a RenderMan-compatible package, setting calls as you go along for different types of lighting and materials with different textures or degrees of reflectivity. You then save the scene as a RIB (RenderMan Interface Bytestream) file, and export it either to a RenderMan application running on your Mac or to a device, such as a film printer, with a RenderMan interpreter built into it. The RenderMan interpreter processes the calls in the RIB file and renders the scene either to your screen or to output media.

All surface treatments and lighting effects require the presence of something Pixar calls shaders. In essence,



Dream Castle

Mike Peraza used Sculpt 3D to model and render this scene, which was used to test camera angles for Disney's *The Little Mermaid*. Copyright © 1990, Walt Disney Company













Marching toward Realism

This series in part re-creates the stages of computer graphics' march toward realistic rendering. Reading from left to right these pictures show wire-frame representation with hidden lines removed; flat shading; Phong shading; simple RenderMan shaders with a light source; more complex (procedural) shaders with texture maps; the addition of shadows, environmental maps, and displacement shaders (which affect surface geometry—note the texture on the torus).

Images courtesy of Pixar and Addison-Wesley, excerpted from Foley, van Dam, Feiner, and Hughes's Computer Graphics: Principles and Practice, 2nd Edition, (Addison-Wesley, 1990).



Roy's Room

Roy Santiago modeled this scene in Swivel 3D and rendered it in MacroMind Three-D. The room includes Phong shading; texture maps of the floor, marble, and painting; and ambient and spot lighting. 3D Works enables you to specify that spotlights create shadows, as has been done here.



Something Fishy

This room was modeled and ray traced in Byte by Byte's Sculpt 3D. Two algorithms were used to produce the fishbowl: one for solid glass, another for surface glass. shaders are programs that describe the appearance of surfaces. Often the code for a shader actually contains information about the visual qualities of a given material. A redwood shader, for example, does not have a PICT file of redwood in it. Instead, it includes information about

the textural, reflective, and tonal qualities of redwood. In RenderMan, just about any effect you may want is handled by a shader. In addition to simulating various materials, shaders might create atmospheric effects, environment maps, or even, in a somewhat twisted example, a wire-frame representation. Shaders also have the unique ability to actually displace geometry, moving polygons on the surface of an object to represent a desired texture, such as a screw thread.

RenderMan handles all models including wire-frame, polygonal, and parametric. At this writing most makers of Mac rendering software and many makers of modeling and CAD programs have announced support for the RenderMan standard. As yet, however, there is no commercially available RenderMan rendering engine. Pixar has anounced that it will market a renderer, MacRenderMan, for \$795. This bare-bones rendering engine, which offers no scene-description or modeling abilities, had a scheduled release date of May 1. Pixar also plans to market the RenderMan engine through third-party software companies, who may or may not enhance the interface with scene-description and other features. According to Pixar, the initial releases of the engine will ship with 9 to 12 shaders; the exact number and mix will depend on the provider. Pixar envisions that soon shaders will be like fonts, with users buying additional visual effects either from Pixar or third parties and plugging them into their systems.

Whichever rendering approach you take, you should try to previsualize the steps, thinking of what you want your final display to look like.

#### Software

So much for theory—what about products? By the time this article comes out, there should be five full-featured, general-purpose rendering programs on the market. They range in price from \$495 to \$7495, and their capabilities are just as variegated.

**ElectricImage Animation System** At the top of the price range is ElectricImage. I looked at a beta version for this article, but the company promised release before the end of spring. ElectricImage does not create models. Instead the program imports the greatest number of formats of all the programs under review. Object files are easily transported and converted to ElectricImage's FACT file format. The package is optimized for foursided polygons and can translate simpler objects or surface-patch data into the FACT format (parametric surfaces are converted to polygonal objects without loss of complexity).

Designed with film and video applications in mind, ElectricImage can emulate any lens in the American Cinematographers Manual—including VistaVision, a format usually used for feature special-effects productions. The programs come with registration overlays to facilitate use with video and film.

ElectricImage does not do ray tracing, instead relying on reflection maps, standard shading, and manipulations of texture maps and other surface treatments. You can use interrelated sliders to control all color channels in addition to hue, saturation, and brightness. This, plus the ability to control opacity, transparency, and luminance in the Alpha channel and full 32-bit depth, allow for extensive control over the appearance of objects and the composition of scenes.

Although ElectricImage is expensive, it will be worth the investment for those of us who want to go out to videotape with film effects templates and video-compatible graphics.

Dimensions Presenter and RayTrace Dimensions VIDI packages its rendering capabilities in two packages. RayTrace Dimensions does just what it sounds like. Dimensions Presenter is for scene description, texture mapping, and animation. A planned upgrade of Presenter, 3-D

	Byte by Byte Corporation	Electric Image	MacroMind	Strata	Visual Information Development
Product	Sculpt 3D 1.0	ElectricImage Animation System 1.0*	MacroMind Three-D 1.0*	StrataVision 3d 1.4	Dimensions Presenter 1.2
Price	\$1500**	\$7495	\$1495	\$495	\$595
Creates Objects					
Wire frame	yes	no	yes	yes	no
Polygonal	yes	no	no	yes	yes (basic primitives)
Parametric	on command	no	no	no	no
Maps	A PROPERTY OF THE PARTY OF THE			COLUMN TO THE REAL PROPERTY.	
Texture	no	yes	yes	yes	yes
Reflection	no.	yes	yes	yes	yes
Bump	no	yes	yes	yes	yes
Ray tracing	yes	no	no	yes	with RayTrace (\$995)
RenderMan	yes	yes	yes	no	no
mports	Object PICT	Cubicomp	DXF	DXF	Design Dimensions
	PRIM	Cyberware	IGES	EPS	DXF
of the second second	SA4D	Echo	PICS	IGES	IGES
With all amora	A SAME TO SECOND	DXF	PICT	MiniCad+	PostSCript
		E&S MPS	Swivel 3D	PICT	Super3D
		FACT	Super 3D	Super 3D	3DPICT
		Filmrole	3DGF	HIS SECTION	PICT
		Mac3D			
		PICS			
ili. Il Bensoluna	The second second	PICT			
		Pro3D			
		Super 3D			
wind versible in		Swivel 3D			
		3DGF	The state of the s	THE PROPERTY A	further most addition to
A Faul Sau		Wavefront		Control book in	
xports	PICT	DXF	PICS	DXF	DXF
	PRIM	E&S MPS	PICT	RIB	PICS
	SA4D	FACT	RIB	and the state of t	PICT
9/ 3/ K 10/ 10/ 10/	THE REPORT OF THE PARTY.	IFS	3DGF		
		PICS			
	distribution of the	PICT		State of the last	AND THE PARTY OF THE OWNER.
		PixelPaint			
median in	Control and the little	Super 3D			

<sup>\*</sup>Prerelease; specifications subject to change. \*\*\$1995 with Kandu Software's CAD Mover file-conversion utility.

Wavefront

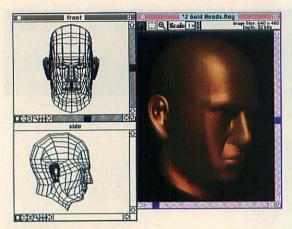
Producer, includes smooth shading and the ability to save files in the RIB format as well as stronger animation features. Presenter reads a variety of 2-D and 3-D data files and allows you to convert some 2-D PICT files, such as those from MacDraft, into 3-D by embedding programming statements with the files. You can also create objects using the included MacDraft-like drawing program and lathing or extruding polygonal objects.

By offering separate smooth shading and ray-trace modules, VIDI is competing with Strata in the market for product design and engineering graphics.

StrataVision 3d StrataVision 3d is a mixed ray-tracing and surface-treatment renderer that also includes reasonably competent modeling capabilities. Version 2.0, slated for release sometime this spring, will have even better modeling abilities. Because ev-

erything is in one module, StrataVision makes it easy to mix standard techniques as called for. Its main strength is as a 3-D visualization tool that enables you to compose using elements from different origins. One nice feature is the ability to import text or PICT files and autotrace them as a first step toward converting them to 3-D objects.

To complement its renderer, Strata sells attribute libraries of PICT



#### Chrome Dome

Michael Gold modeled this head in Design
Dimensions using parametric bicubic patches. He
used RayTrace Dimensions and Dimensions
Presenter to ray trace, smooth shade, and
antialias the scene.



#### **Coming Attraction**

SystemSoft of Los Altos, California, is marketing its powerful modeling and rendering program in Japan but, as this goes to press, has yet to find an American distributor. The package includes highend features such as the ability to perform depthof-field calculations and to render on a distributed network. Toshiya Tokieda modeled this ray-traced Lamborghini using the package's parametric modeling features and then ray traced his model.

graphics for texture mapping. The first two libraries, Wood Grain and Decorative Stone, are shipping at this writing (\$139 each). The company plans to release a building-materials library soon.

Sculpt 3D Byte by Byte's Sculpt 3D was designed as an artist's tool, enabling you to move from sculpting images to rendering and animating them. It provides ray tracing as well as Phong and Gouraud shading. By the time you read this, Sculpt 3D/Textures will be available. This upgrade promises features for creating sophisticated hybrid renderings, in which a single texture map might be combined with ray trac-

ing, smooth shading, and transparency. The upgrade will cost \$1000.

For now, Sculpt 3D offers a good modeling environment. You can manipulate polygonal objects by moving control points on the vertices. The animation features are also good, offering precise control of objects' motion. You manipulate the motion path of animation by moving the

control points of the objects' vertices (adjusted by splines that subdivide along selected paths).

Although Sculpt 3D is efficient as a stand-alone Mac tool, the program outputs files in various workstation formats as well, which could enable users to employ the Mac as a design and preview station and handle rendering on an AT&T or Intel workstation, for example.

MacroMind Three-D MacroMind, best known for its animation compositing and display program, MacroMind Director, has now completed a 3-D and rendering package, scheduled for release this June. The total package comprises three separate applications—3DWorks, RenderWorks, and ImageWorks—that are linked under MultiFinder and work seamlessly together, one launching the next.

The 3DWorks application imports a number of 3-D formats and offers limited modeling abilities of its own. The program is not a ray tracer; instead it enables you to perform various surface treatments as well as scene description. Through spline controls, you can manipulate the motion paths of objects, the camera, light sources, and color transitions in animations. The program imports Swivel 3-D models, and maintains their hierarchically linked structures. These can also be manipulated using spline controls.

The native format of 3DWorks is 3-DGF, which MacroMind developed and has made available to developers. According to MacroMind, 3-DGF has many advantages over DXF, the current most popular geometry standard. Once you've described your scene in 3DWorks, you simply use the Render

command, and the program launches RenderWorks, which carries out your instructions.

When rendering is complete, ImageWorks is launched automatically. This program has some of the abilities of MacroMind Director, enabling you to create limited transitions between files (dissolves) and compositing (positioning objects over backgrounds). You can also combine rendered animations by creating a hierarchy of windows. A pop-up videotape recorder control panel enables you to output animations to tape, if you have the appropriate controller boards.

#### **Rendering Judgment**

It's been part of the promise of the Macintosh as a graphics workstation that it would make high-end rendered 3-D scenes affordable for presentations or Mac-based multimedia. With the products just discussed, it looks like this capability has arrived, more or less.

Still, Macintosh users shouldn't expect to create the sort of 3-D rendered animations being done at places like Pacific Data Images or Pixar. The Mac 3-D modeling and rendering software does not have the powerful automatic animation functions applied in the entertainment industry, nor does the hardware have the power of specialized workstations.

If you do decide to buy into Macintosh rendering, go for as much hardware power as you can afford. You should definitely be working on at least a Mac II with an 80-megabyte hard disk minimum and 4 to 8 megabytes of RAM. And although an 8-bit video board is acceptable for working on and viewing rendered images, a 32-bit board (with 16 million colors) makes more sense. After all, since these programs are expensive and the process is time-consuming, you may as well have the best Mac display available to enjoy the amazing images you'll be able to produce.

See Where to Buy for contact information.

Stuart Cudlitz is an artist and filmmaker who has designed computer graphics and special visual effects for feature films, broadcast television, and interdisciplinary fine arts.





# SUPERSTACKS!

# 3RD ANNUAL CONTEST







HyperCard

Plus

SuperCard



#### **Be Famous**

We'll write about your winning entry in *Macworld*.

#### **Win Great Prizes**

- A 4MB memory upgrade from National Semiconductor
- An Audiomedia digital audio recording system from Digidesign
- A MediaTracks Multimedia Pack from Farallon Computing
- A MacinStor 100-ZFP hard disk from Storage Dimensions



#### Deadline

Macworld must receive entries by August 15, 1990.

#### Sponsored by

Apple Computer, Digidesign, Farallon Computing, *Mac-world* magazine, National Semiconductor, Silicon

Beach Software, Spinnaker Software, and Storage Dimensions.

#### **Contest Rules**

No more than two (2) entries per contestant. Each entry must include a \$5 entry fee and a one-page summary headed with the name of entry, contest category, K-count, the price of entry, as well as your name, address, and phone numbers. In the summary, state the purpose and in-

MacinStor

SUBSECTION STATE OF THE STATE OF

tended audience of your entry. Disks will not be returned. Employees of the sponsors are not eligible to enter. Winning stacks from the 1989 SuperStacks contest are not eligible. *Macworld* reserves the right to republish or reuse winning entries.

#### Categories

- Best Commercial Entry
- Best Vertical-Market Entry Entries custom made to solve a specific need
- Best Training Entry
- Best Educational Entry
- K-12 entries
- Higher education entries
- Best Entry Available for under \$20
- Best Multimedia Entry Laserdiscs, CD ROM, and Mac-based presentations accepted. No videotape submissions will be accepted.
- Best Entry by Kids (Age 16 and under)
- Best International Entry
- · Best Interface Design
- Best Development Tool
- Leslie Liedtka Memorial Award This award will go to the best application that doesn't fit into any of the other categories.

## Send your entry to MACWORLD

SuperStacks Contest 501 2nd St. San Francisco, CA 94107

Make your check or money order payable to Macworld.





# OTOCO ADUC DV 14ADV INHAMM

# Midrange Hard Disks

MACWORLD LABS TESTS 46 HARD DISKS IN THE 80MB-TO150MB RANGE TO MAKE SURE YOU GET THE BEST-QUALITY
BYTES FOR YOUR BUCKS

ince we last reviewed hard disks under 300MB in capacity ("Turning 40," September 1989), drive makers have brought out several new products and revamped some older ones. One new class of hard disks has emerged—pocket-size portables that take their power directly from the Mac. Still, the buying criteria haven't changed: look for price, performance, service options, case design, and software.

Because drive technology and the recipe for producing a winning unit have remained so constant, vendors have had a chance to correct many deficiencies criticized in earlier products. GCC and Rodime, for instance, have completely reworked their older lines. In September, both of these companies sold hard disks that were slow performers with uninspiring cases, manuals, and software. Now GCC's UltraDrive and Rodime's Cobra are among the fastest performers: they sport new, sleek cases; and they include solid software and improved manuals.

Not every vendor has been so responsive. Drives from MacProducts and Relax still can't duplicate folders reliably, and their case design has yet to be given a more modern, streamlined appearance. CMS has kept up the appearance of its Platinum line, but the company still doesn't include

any software—not even a copy of Apple's marginally useful HD Backup.

Although the midrange market is crowded-Macworld Labs tested over two score hard disks for this articlein the end we were able to divide the offerings into three simple categories: those we like best, those that are good (but not especially so), and those we don't recommend. The ones we like best contain a well-rounded set of features or are outstanding in a certain area (say, speed or support). The runners-up are products we would have no qualms about purchasing; if found at a bargain price or with good dealer support, they could be top picks. As for those we don't recommend-a group that includes the portable units-well, let's just say we found no reason to purchase them over the other choices.

#### The Winners

Deltaic, FWB, GCC, La Cie, Maxcess, MicroNet, Microtech, Rodime, Ruby, Storage Dimensions, SuperMac.

The drives we like best include most of the fastest performers (see "Hard Disk Speed Tests"). But speed isn't everything. For instance, hard disks from Maxcess, MicroNet, and Super-Mac were average performers, but still made it into our top-picks list due to good software and good customer reports on service and reliability.

Based on an informal poll (letters *Macworld* has received and conversations on various Mac bulletin boards), hard disks from MicroNet and Storage Dimensions get high marks for reliability. Similarly, these companies offer good service (see "Hard Disks Compared"). Other service stars include La

BY CHERYL E. SPENCER



Cie and Microtech, with their five-year warranties, toll-free support, and guaranteed turnaround times for repairs, 72 and 48 hours, respectively.

All of our favorite hard disks include good formatting and diagnostic software, but a few products include even more. Any backup software other than Apple's HD Backup is a plus—Rodime's Cobra comes with Fastback, Microtech's Nova has DS Backup, and SuperMac's DataFrame includes DiskFit. Maxcess's hard disks include no



SuperMac's Data-Frame, MicroNet's Micro/Stack, and Deltaic's Server 100H

backup software, but they do include CE Software's QuicKeys Lite (a macro program that, unlike the standard version of QuicKeys, limits you to 14 keystrokes), DiskTop (a useful file-management program), and MockPackage (a group of utilities such as a text editor and background printer). These excellent products are worth buying on their own. La Cie's Cirrus drives include hard disk-management software and SilverServer, an application that lets you share hard disks and modems over an AppleTalk network.

Case design also played a part in our decision. GCC's UltraDrive is sleek with rounded edges and classy lines, and it fits perfectly under a Macintosh SE. FWB's PocketHammer, La Cie's Cirrus, and Maxcess's V-Series are small, lightweight units that are easy to carry. You can purchase a carrying case for the PocketHammer; the Cirrus and V-Series come with one. You can also buy the La Cie and Maxcess hard disks in a case that fits underneath a Macintosh SE. Storage Dimensions' MacinStor and MicroNet's Micro/Stack

have cases that are a bit larger and bulkier than the others.

It is hard to pick a price-for-performance leader since retail prices don't always reflect what you actually pay for a hard disk. If the vendor sells direct, then the price listed is what you will pay, barring a special promotion or a group discount. You may pay much less than the listed price if the vendor sells through a dealer only.

Although we can't objectively name a best buy we do have favorites. We found GCC's UltraDrive, La Cie's Cirrus, Maxcess's E-Series and V-Series, Microtech's Nova, and Rodime's Cobra to be the most appealing. The UltraDrive is the most slickly packaged and includes the best manual. La Cie and Microtech come out on top in service and support; La Cie and Maxcess offer the best software. Rodime's Cobra was a clear winner thanks to good speed, on-screen LEDs, and a nice case that includes two extra power outlets. But be forewarned that this unit makes a whirring sound when in use—several of us at Macworld liked to hear the drive working, but some users may prefer a quieter unit such as the Cirrus or Liberty 100 (see "A Little Quieter Please").

#### The Best of the Rest

Apple, Dolphin, EMAC, Hard Drives International, iDS, Liberty, Mirror, PCPC, PLI, ProCom.

Products in this category had nothing particularly wrong with them nor were they particularly impressive. Notice that Apple's Hard Disk 80SC is in this category. This disk provides reasonable speed, good manuals, and—if you opt for the external version—a perfect aesthetic match with a Macintosh SE. What you won't get is a cut-rate price.

PLI's PL100 Turbo isn't very fast, and the installation manuals are worthless, but it offers a nice set of custom software—a spooler, a disk optimizer, and a disk-cache utility which, with enough tweaking, can speed up the unit some 5 percent. Hard disks from Dolphin, iDS, and Mirror are faster but they don't offer much in the way of software (Dolphin's Integra includes partitioning software, and the iDS Prologue includes a varied assortment of shareware, but these are slim pickings compared to, say, the CE Software programs bundled with the Maxcess drives). Likewise, Hard Drives International's Power Drive doesn't have much to distinguish it from the crowd, except for an extremely low price. Still, the drive is solidly constructed and worked well during our tests.

The two hardest calls in this category were EMAC's Impact and the Liberty drive. Both are fast, small, and lightweight. You can even purchase a carrying case for the Liberty for an extra \$29. Unfortunately, neither product has anything special to recommend it over La Cie's Cirrus,

## HARD DISK SPEED TESTS (IICX)

Actual result

35.8 Fastest in test

80.5 Slowest in test

Color groupings are based on indexed speed comparison

Faster

Macworld Labs tested hard disk speed on several everyday operations such as loading applications and saving documents. In addition, we used SCSI Evaluator to test the drives' ability to read and write data without any application overhead (in these tests, larger numbers are better since SCSI Evaluator times the number of kilobits the drive can transfer in a second). We ran the tests on drives attached to a Macintosh llcx and on drives attached to a Macintosh SE. Some drives performed better in comparison to their peers on one machine or another.

Drives are listed in order of overall fastest to overall slowest drive, based on their cumulative speed scores. Note that drives that use the Quantum mechanism generally fared best, although the top three drives—the Deltaic Server 100H, the Microtech Nova 150, and the Rodime Cobra 100e—used CDC, Micropolis, and Rodime mechanisms respectively. The color coding provides an easy way to see which drives perform fastest (red) or slowest (gray) in any given test. (continued on page 151)

	Esculie and Long transference and Long trace South					Bentale Ber Schale Bertale Ber		
$\mathbf{X}$ )	/80	ONID	Make	Dinne		Make De	ator water	
41)	Second's	's . S	90g. 'A	arii e	t <sub>ee</sub> , 6.9	S. Viggi, en	olate of	
Overall fastest	Oublie	Open	Searc	680	5840	( See	2C2, Mr.	
Deltaic Server 100H (CDC)	66.2	8.6	47.1	12.6	7.4	10107	9319	
Microtech Nova 150 (M)	71.8	8.7	46.2	12.4	7.5	7678	6912	
Rodime Cobra 100e (R)	75.2	9.3	54.5	13.3	8.8	7150	6428	
GCC UltraDrive S 80 (Q)	87.9	10.2	45.8	13.2	11.6	6563	6528	
Apple Hard Disk 80SC (Q)	67.6	10.0	51.0	13.0	11.3	5635	5932	
La Cie Cirrus 80 (Q)	86.0	9.7	45.5	12.9	10.7	6067	6172	
SuperMac DataFrame XP 100 (Q)	84.4	9.6	50.1	12.9	10.0	5866	6005	
Ruby Systems Dwarf 80 (Q) <sup>1</sup>	84.4	10.2	45.0	12.7	11.0	5929	5944	
Dolphin Integra 80 (Q)	83.8	10.1	45.6	12.9	11.0	6195	6193	
Storage Dimensions MacinStor ZFP 80 (Q)	82.7	10.0	45.9	12.9	11.2	6673	6705	
FWB PocketHammer 80 (Q)	81.4	10.0	45.1	13.2	11.4	6601	6623	
Advanced Gravis HardPac 105 (Q)	79.9	9.8	50.5	13.0	10.6	6582	6620	
Ruby Systems StarDrive 80 (Q)	84.8	9.9	50.4	12.0	10.0	6220	6211	
iDS Prologue 80 (Q)	83.0	10.2	45.5	13.1	11.2	6634	6652	
Hard Drives Int'l PowerDrive 105 (Q)	78.5	9.9	51.0	12.9	11.0	5806	5861	
Liberty 105Q (Q)	87.1	9.9	45.6	13.1	11.3	6051	6127	
Tallgrass TravelPac 80 (Q)	82.3	9.9	50.4	13.2	11.0	6205	6167	
Jasmine DirectDrive 105 (Q)	83.0	10.6	46.6	13.3	11.5	6642	6662	
EMAC Impact 80 (Q)	83.1	9.8	50.5	13.0	11.9	6191	6185	
Microtech Nova 105 (Q)	83.7	9.9	51.5	13.3	11.3	6100	6095	
MacProducts Magic 105 (Ω)	81.9	10.1	52.8	13.2	11.2	6610	6651	
Dolphin Porta 100 (C) <sup>2</sup>	93.5	10.3	54.2	12.7	9.9	5820	5785	
Ehman Hard Drive 105 (Q)	88.9	9.9	51.0	13,1	11.5	5920	4159	
Mirror MP 80 (Q)	87.3	10.5	50.8	13.0	11.2	6149	6136	
Maxcess E-Series 105 (Q)	85.8	10.4	51.0	13,3	11.4	6068	6080	
Relax Hard Plus 100 (C)	91.1	10.5	56.0	12.7	10.2	6150	6094	
MacProducts Magic 100 126 (CDC) <sup>3</sup>	109.0	9.7	51.4	12.8	10.7	3704	3452	
MicroNet Micro/Portable 100 (C) <sup>4</sup>	93.6	10.1	54.8	12.9	10.7	5726	4792	
PCPC MacBottom 84 (Q)	87.4	10.3	50.7	13.1	12,4	6140	6193	
CMS Platinum 100 (C)	93.4	10.5	55.1	13.0	10.4	6092	5981	
MacProducts Magic 80 (Ω)	117.7	10.1	46.6	13.1	10.9	6570	6556	
iDS Prologue 105 (C)	92.1	10.6	55.4	13.0	10.5	6086	6053	
PLI PL100 Turbo (C)	92.3	10.3	60.2	12.7	10.3	5820	5755	
Ehman Hard Drive 135 (F)	103.6	11.1	54.5	13.2	11.8	4951	3922	
Jasmine DirectDrive 130 (F)	91.7	12.0	60.1	13.4	11.9	4965	4740	
Procom MD 100 (C)	115.9	11.0	61.5	13.0	11.9	3457	4161	
MicroNet Micro/Stack 105 (CDC)	76.1	11.6	70.9	15.1	14.6	9161	9178	
Relax Hard Plus 150 (CDC)	84.0	11.4	65.3	15.1	15.3	7796	7801	
CMS Platinum 150 (CDC)	86.7	11.8	63.4	15.2	15.3	7147	7153	
Toshiba America MacKit 140 (T)	84.5	11.7	69.6	15.2	15.7	7821	7829	
Procam MD 150 (M)	102.2	11.9	64.0	15.3	16.3	5096	4203	
Heart Data 80 (Q)	97.0	12.5	72.0	15.2	16.5	6069	6098	
Relax Hard Plus 80 (S)	105.4	12.7	74.4	15.4	17.1	6690	6684	
Crate MacCrate 105 (T)	117.4	12.7	63.7	15.6	18.6	4416	2985	
BSM MacCider 105 (T)	117.0	12.6	69.0	15.3	18.0	4395	2975	
Jasmine DirectDrive 80 (Y)	115.0	12.9	67.4	15.5	18.2	4226	4230	
Procom MD 80 (Y)	129.1	12.9	67.6	15.7	18,4	3305	3327	
Ehman Hard Drive 80 (S)	130.1	13.9	78.0	16.0	19.5	3467	3453	

ter temper jone est

<sup>3</sup>Porta 100 is the name of the portable version of the Integra. <sup>4</sup>Magic 100 126 is the name of the portable version of the Magic.

<sup>&</sup>lt;sup>1</sup>Dwarf 80 is the name of the portable version of the StarDrive.

<sup>2</sup>Micro/Portable 100 is the name of the portable version of the Micro/Stack.

Company	Warranty	Extended Warranty	Toll-free Telephone Support	Guaranteed Turnaround Time	Data Recovery on Request
Apple Computer	1 year			1	
Advanced Gravis	1 year			ı.	•
BSM	1 year				
CMS Enhancements	1 year			1	
Crate Technology	2 years			7.57	
Deltaic Systems	1 year				-
Dolphin Systems	2 years				
Ehman	1-2 years <sup>2</sup>		•	•3	
Everex Systems	1 year			v	
FWB	1 year			t i	•
GCC Technologies	2 years			t	.4
Hard Drives Int'l	1 year				
Heart Data Corp.	2 years			,	
iDS Systems	3-5 years <sup>2</sup>			E.	
Jasmine Technologies <sup>5</sup>	2 years		The stay		
La Cie	5 years		, •	72 hours	
Liberty Systems	1-2 years²			48 hours	
MacProducts USA	1-2 years <sup>2</sup>	*			
Maxcess	2 years		1000	48 hours	
MicroNet Technology	1 year	•		i	
Microtech International	5 years		• 4	48 hours	
Mirror Technologies	2 years	•		-3	•4
PCPC	2 years			•3	
PLI	1 year			Line Maria	•
ProCom Technology	1 year			48 hours	
Relax Technology	1 year	بالبخاراي	•	1	
Rodime	1 year			72 hours	
Ruby Systems	1 year	•		2	
Storage Dimensions	1 year	•		48 hours	
SuperMac Technology	1 year			t.	
Tallgrass Technologies	2 years	1		1	•

<sup>&#</sup>x27; Up to the dealer.

FWB's PocketHammer, or Maxcess's V-Series.

Not only are ProCom's MD drives nicely packaged, with good manuals, but their switchable termination is a handy innovation especially in situations where a hard disk will be moved between Macs. In a chain of peripherals, where you place a hard disk determines whether or not it needs to be terminated. Switchable termination combines the seamlessness of internally terminated units with the flexibility of externally terminated ones. We had hoped to recommend Procom's MD drives highly. Alas, the MDs were some of the slowest of the pack. Buy these drives only if your need to switch termination outweighs your need for performance.

Finally, there are the MacBottom drives from

The service a company provides can be a make-or-break factor for users who are deciding which drive to buy. Even Apple has made concessions to customer support by upping its warranties to one year. If your drive goes bad, some companies guarantee that you will receive a replacement drive within a certain amount of time. Others offer a guaranteed turnaround time only to their dealers, who in turn can pass the guarantee on to the customer. Some companies will even try to save the data on a crashed hard disk if you ask-dealers can't do this easily since many data rescue attempts require that the disk be disassembled in a sterile room. One company, Mirror Technologies, offers a hard disk repair and data recovery service for a wide variety of hard disks. Prices for the service vary according to the size and type of disk.

PCPC. I still have a soft spot in my heart for these longtime survivors. They are reasonably fast, inexpensive, and include decent backup and partitioning software. They also come with a custom desk accessory for finding files, and a file-copying utility that lets you split a large file among several floppy disks. But lately, Macworld has received an above-average number of complaints about PCPC's customer service. The company claims, however, that it has added support staff to solve the problems.

#### The Losers

BSM, CMS, Crate, Ebman, Heart, Jasmine, Mac-Products, Relax, Toshiba, Westcom.

Ehman's drives are one of the lowest priced, and I've used a 40MB unit for about three months with no trouble. Yet, one of the review units that Macworld Labs received had a SCSI connector that didn't fit properly with the cable and jammed when we plugged it in (I gave up disconnecting them). In addition, one of the three review units was missing the MacTree Plus software.

Ehman's formatting software is also poorly designed and gave us no end of trouble. Any hard disk attached to a Macintosh II should be set at a 1:1 interleave ratio to ensure maximum performance. The Ehman 80MB drive, however, performed extraordinarily slowly on write operations (such as saving or duplicating a file) when run on a Macintosh II at a 1:1 ratio. For instance, it took the 80MB drive 36 seconds to save a Page-Maker file at a 1:1 ratio and 4.5 minutes to duplicate a 10MB folder. By reformatting the drive to a 2:1 ratio (the standard for a Macintosh SE) we were able to improve the write times—the same PageMaker save took 19 seconds and the folderduplication time was cut in half. Still, the Ehman 80 was one of the slowest performers.

The other two drives that Ehman sent us-a 100MB Quantum-based drive and a 130MB Fujitsubased drive-were not obnoxiously slow on write operations at a 1:1 interleave on a Macintosh II,

<sup>&</sup>lt;sup>2</sup> Depends on which mechanism you buy.

<sup>4</sup> For a fee

<sup>5</sup> At press time, Jasmine had filed for Chapter

<sup>&</sup>lt;sup>3</sup> Overnight replacement service for a small charge per year. 11 bankruptcy and was not shipping drives.

# HARD DISK SPEED TESTS (SE)

Actual result

35.8 Fastest in test

80.5 Slowest in test

Color groupings are based on indexed speed comparison

Faster

The color-coded groupings were determined by first indexing the actual results and then dividing the indexed numbers into five groups. The first four groups include drives that decrease in speed by 10 percent—the fifth group includes drives that are 50 percent or more slower than the drives in the first group. The absolute fastest drive in each test is indicated with a yellow rectangle while the absolute slowest is indicated with a black rectangle.

C = Connor

CDC = CDC

 ${\sf Cl}={\sf C}.$  Itoh

F = Fujitsu

M = Micropolis

Q = QuantumR = Rodime

S = Seagate

SI = Seagate (formerly Imprimis)

T = Toshiba

Y = YE-Data

C	SK SPEED		,		,	resent recent 12.9	delight of the control of the contro	a /	
٠	IK OI LLD		/ ,	set	CHING.	nsion	Settate docut	ac. and	
	<b>\</b>	/	MB for	Melo	'S Dirin		Net de	Second Park	2
H	1)	Seconds	6/01	dell's	Of BIL	(e)	LENIO CITE OF	SEST BURIES	,
		Seculic	or 646.	arch	ME	7063	(Kilos de	Slevini	b
	Overall fastest	On.	06,	58	ton	48.	50	ey. 1.	
	Deltaic Server 100H (CDC)	113.5	18.6	180.4	45.5	12.9	5300	4258	
	Hard Drives Int'l PowerDrive 105 (0)	118.6	19.4	174.8	45.3	13.4	5005	4257	
	GCC UltraDrive S 105 (Q)	106.8	19.9	158.3	46.0	15.8	3667	3722	
	Ruby Systems Dwarf 105 (Q) <sup>1</sup>	116,7	20.2	158.2	45.8	14.8	4659	4168	
	Storage Dimensions MacinStor ZFP 105 (Q)	122.0	19.5	158.0	45.9	14.8	4437	4383	
	EMAC Impact 80 (Q)	122.1	19.7	159.0	45.8	15.1	4366	4185	
	Maxcess E-Series 105 (Q)	133.5	16.4	159.4	46.0	15.9	3674	3609	
	La Cie Cirrus 105 (Q)	125.1	20.1	169.5	45.9	15.0	4339	4182	
	Jasmine DirectDrive 105 (0)	124.4	20.3	161.0	45.9	15.0	4452	4390	
	Microtech Nova 150 (M)	127.5	18.6	179,7	45.4	13:9	4020	3406	
	Apple Hard Disk 80SC (Q)	110.2	20.0	178.7	46.0	15.7	3784	3300	
	Ruby Systems StarDrive 80 (Q)	121.9	19.6	177.5	45.6	14.4	4223	4181	
	Tallgrass TravelPac 80 (Q)	124.4	19.5	178.0	45.8	14.3	4356	4189	
	Dolphin Integra 80 (Ω)	122.3	19.5	177.7	45.8	14.7	4374	4189	
	SuperMac DataFrame XP 100 (Q)	123.5	19.6	175.7	45.6	14.7	4957	4197	
	Mirror MP 80 (Q)	123.4	19.6	177.9	45.8	14.7	4339	4187	
е	Liberty 105Q (Q)	124.1	19.6	178.4	46.8	14.6	4364	4176	
8	PCPC MacBottom 84 (Q)	122.9	19.7	178.0	45.9	14.8	4355	4178	
е	Advanced Gravis HardPac 105 (Q)	123.3	19.6	177.7	45.8	14,9	4461	4392	
	FWB PocketHammer 80 (Q)	131.2	20.3	159.0	46,2	15.8	3775	3815	
S	MacProducts Magic 80 (Q)	118.3	20.0	183.5	45.8	15.4	5316	4400	
0	Microtech Nova 80 (Q)	124.0	19.6	179.5	46.0	15.2	4320	A172	
S	iDS Prologue 80 (Q)	123.6	19.9	179.5	45.9	15.2	4451	4388	
е	MicroNet Micro/Portable100 (C) <sup>2</sup>	130.6	20.0	177.4	45.6	14,8	4129	3924	
t	Dolphin Porta 100 (C) <sup>3</sup>	129.8	19.9	186.7	45.7	14,4	4113	3991	
n	Rodime Cobra 100e (R)	121.5	20.1	180.3	46.1	15.6	4757	3964	
۷	MacProducts Magic 100 126 (CDC) <sup>4</sup>	134.7	20.9	167.9	45.6	15.1	4205	3464	
t	CMS Platinum 80 (C)	130.8	20.0	187.8	45.7	14.5	4220	4078	
	PLI PL100 Turbo (C)	130.5	20.0	187.1	45.6	14.7	4038	3968	
	iDS Prologue 105 (C)	131.5	20.2	188.9	45,9	15.2	4366	4191	
	Jasmine DirectDrive 130 (F)	127.2	20.7	186.9	46.1	15.8	4749	4150	
	Relax Hard Plus 100 (C)	131.9	20.6	193.0	45.8	15.6	4372	4201	
	MicroNet Micro/Stack 105 (CDC)	120.2	21.4	196.1	46.8	17.3	5181	4260	
	Toshiba America MacKit 140 (T)	127.8	20.9	195.2	47.4	17.9	4287	4209	
	Heart Data 80 (Q)	129.3	21,2	198.3	47.4	18.1	4253	4220	
	CMS Platinum 150 (CDC)	133.7	20.8	196.1	47.3	18.2	3694	3684	
	Relax Hard Plus 150 (CDC)	134.4	21.8	201.5	47.4	19.0	4027	4032	
	Ehman Hard Drive 105 (Q)	170.0	19.5	178.1	45.9	19.9	4334	1258	
)	Ehman Hard Drive 135 (F)	174.2	20.7	181.0	46.0	20.4	4682	1342	
	Jasmine DirectDrive 80 (Y)	140.6	22.5	200.7	47.8	20.5	4177	3701	
	BSM MacCider 105 (T)	171.2	22.5	175.3	47.7	22.5	2561	2540	
	Relax Hard Plus 80 (S)	154.9	23.0	205.4	47.9	21.0	3590	3523	
	Crate MacCrate 105 (T)	172.1	22.5	195.1	47.5	10.0	2562	2541	
	Procom MD 100 (C)	235.8	23.4	192.4	47.4	19.8	1184	3369	
	Procom MD 150 (M)	244.0	24.5	202.2	49.1	23.8	1194	2563	
	Procom MD 80 (Y)	255.4	25.5	204.5	49.2	40.8	1183 3450	2130 425	
	Ehman Hard Drive 80 (S)	324.6	23.0	205.2	48.3	40.0	3400	423	

<sup>1</sup>Dwarf 80 is the name of the portable version of the StarDrive.

<sup>2</sup>Micro/Portable 100 is the name of the portable version of the Micro/Stack.

<sup>3</sup>Porta 100 is the name of the portable version of the Integra. 
<sup>4</sup>Magic 100 126 is the name of the portable version of the Magic.

Company	Product	Capacity/ Mechanism'/ Price	Internal Version	Sold Direct or through Dealers	Portable Version Available	Dimensions (h. x w. x d., in Inches)
Apple Computer	Apple Hard Disk 80SC	80MB/Q/\$1799	yes	dealers	no	3.1 × 9.7 × 10.5
Advanced Gravis	HardPac	80MB/Q/\$1595; 105MB/Q/\$1795	no	dealers	yes <sup>2</sup>	2 x 4 x 7.2
BSM	MacCider	80MB/S/\$893; 105MB/T/\$1281	yes	dealers	no	3.1 x 9.9 x 11
CMS	Platinum series	80MB/C/\$1479; 100MB/C/\$1995	yes	dealers	no	2 x 10 x 10.25
		150MB/CDC/\$2179			1 2 2	
Crate	MacCrate	80MB/S/\$949; 105MB/T/\$1049	yes	dealers <sup>3</sup>	yes	2.75 x 9.75 x 10.75
Deltaic	DS100Q/Server 100H	105MB/Q/\$1199; 105MB/CDC/\$1299	no	direct	no	2.3 x 9.7 x 9.75
Dolphin	Integra	80MB/Q/\$1302; 105MB/Q/\$1346 150MB/M/\$1895	yes	dealers	yes	2.4 x 13 x 14.5
Ehman	Ehman Hard Drives	80MB/S/\$599; 105MB/Q/\$799	yes	direct	no	2.5 x 9 x 9
		135MB/F/\$999				
EMAC	EMAC Impact	80MB/Q/\$1299	yes	dealers	по	2.5 x 6 x 10.5
FWB	PocketHammer	80MB/Q/\$1495; 105MB/Q/\$1595	yes	dealers	no	6.5 x 3 x 9
GCC	UltraDrive S	80MB/Q/\$1099;105MB/Q/\$1299	yes	both	no	2.75 x 9.5 x 10.75
Hard Drives International	PowerDrive	80MB/S/\$499; 80MB/Q/\$649	yes	both	no	2.5 x 9.75 x 9.75
		105MB/C/\$629; 105MB/Q/\$699				
Heart Data	Heart Data	80MB/Q/\$1119; 105MB/Q/\$1203	yes	both <sup>3</sup>	no	3.1 x 9.9 x 11
IDS	iDS Prolague	80MB/Q/\$1345; 105MB/C/\$1695	yes	dealers	yes	3 x 10 x 11
		130MB/F/\$1895			HELD IN	
Jasmine	DirectDrive	80MB/Q, CI, Y/\$849; 105MB/T or Q/\$1099	yes	direct	no	2.5 x 9.5 x 10.5
		130MB/F/\$1199				
La Cie	Cirrus	80MB/Q/\$859; 80MB/C/\$759	yes	direct	no	3 x 6 x 9
		105MB/Q/\$959; 100MB/C/\$859				
La Cie	Cirrus (zero footprint)	80MB/Q/\$799; 80MB/C/\$699	yes	direct	no	3 x 10 x 10
		105MB/Q/\$899; 105MB/C/\$799				
Liberty	Liberty 100C/105Q	100MB/C/\$999; 105MB/Q/\$1099	no	direct	yes	2 x 5 x 7
MacProducts	Magic	80MB/Q/\$775; 105MB/Q/\$869	yes	both	no	2.5 x 10 x 10.75
		100MB/SI/\$950		40-40		
Maxcess	E-Series	80MB/Q/\$1395; 105MB/Q/\$1495	yes	both	no	2.4 x 9.5 x 9.75
Maxcess	V-Series	80MB/Q/\$1395; 105MB/Q/\$1495	yes	both	no	6.5 x 3 x 8
MicroNet	Micro/Stack	80MB/S/\$1245; 105MB/C/\$1395	yes	dealers	yes	3 x 10 x 10.5
Company Company	New	105MB/CDC, SI/\$1795 80MB/Q/\$1019; 105MB/Q/\$1099	1100	dostoni		25 - 07 - 105
Microtech	Nova	150MB/M/\$1469	yes	dealers <sup>3</sup>	no	2.5 x 9.7 x 10.5
Mirror Technologies	Mirror MP	80MB/Q/\$887; 105MB/Q/\$947	Voc	direct	no	2.5 x 10 x 10.75
PCPC	MacBottom	84MB/Q/\$789; 105MB/Q/\$1029	yes	both	no	2 x 9.5 x 9.7
PLI	PL100 Turbo	100MB/C/\$1099; 100MB/T/\$1099	yes	dealers	no	2.37 x 9.75 x 9.75
Procom	MD series	80MB/Y/\$1195; 100MB/C/\$1350	yes	dealers	no	2.25 x 9.7 x 10.25
TOCOM	WD scribs	150MB/M/\$1895	yus	ucuicis		2.23 × 3.7 × 10.23
Relax	Hard Plus Series	80MB/S/\$879; 100MB/C/\$1149	yes	dealers	yes	3.5 x 10.5 x 10.5
		150MB/CDC/\$1749				
Rodime	Cobra 100e	100MB/R/\$1949; 100MB plus/R/\$1799	yes	dealers	no	2.4 x 9.7 x 10.4
Ruby Systems	StarDrive	80MB/Q/\$1385; 90MB/SI/\$1569	yes	dealers <sup>3</sup>	yes	2.25 x 10 x 10.5
		105MB/Q/\$1599; 130MB/SI/\$1999	- TOTAL			
Storage Dimensions	MacinStor ZFP	80MB/Q/\$1799; 105MB/Q/\$1899	yes	dealers	no	3 x 9.7 x 10
SuperMac	DataFrame XP	105MB/Q/\$1599; 150MB/M/\$2099	yes	dealers	no	8 x 3 x 9.5
Tallgrass	TravelPac 80	80MB/Q/\$1895	no	dealers	yes²	2 x 4.5 x 7
Toshiba America	MacKit 140	140MB/T/\$1595	yes	dealers <sup>3</sup>	по	3.75 x 10.25 x 10
Westcom	WE	80MB/Q/\$690; 105MB/Q/\$754	yes	both	no	3 x 10 x 10.5

<sup>&#</sup>x27;C = Connor, CDC = CDC, CI = C. Itoh, F = Fujitsu, M = Micropolis, Q = Quantum,

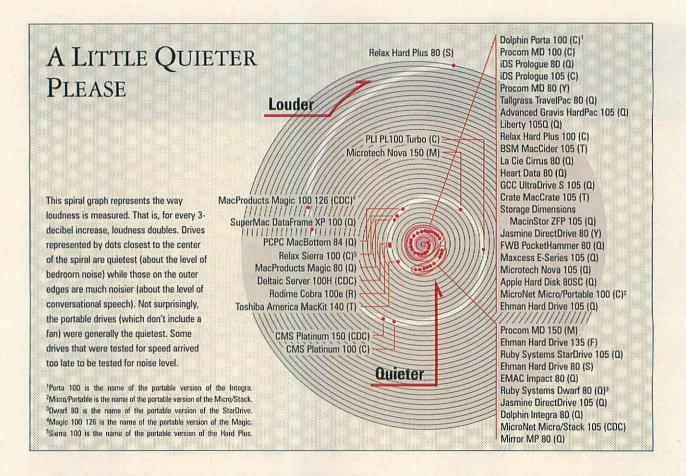
R = Rodime, S = Seagate, SI = Seagate (formerly Imprimis), T = Toshiba, Y = YE-Data.

<sup>&</sup>lt;sup>2</sup> Portable version only.

<sup>3</sup> Sold direct to corporations, schools, government, or in areas where there are no dealers.

<sup>&</sup>lt;sup>4</sup> Drive(s) not received in time for testing.

	Case Material	Type of Termination	Partitioning Software	Backup Software	Password- Protection Software	Other Software	Best Seek Time on Mac Ilcx (in Milliseconds)
	plastia	outomal		UD Rookup			22
	plastic	external	no	HD Backup	no	Advanced Security	22
	plastic metal	internal	00	no HD Backup	yes	Advanced Security	21 27
	metal	internal	yes no	по	no no	no no	18
	, meta	internal		110			
798	metal	internal	yes	no	no	no	26
	metal	external	yes	no	yes	no	19
	metal	internal	yes	HD Backup	no	shareware	22
	metal	internal	yes	DS Backup	no	MacTree Plus	22
		e in the					
	plastic	external	yes	HD Backup	no	no	22
	metal	internal	yes	HD Backup	yes	Hard Disk DeadBolt	22
	plastic	external	yes	SUM II	yes	SUM II, shareware, spooler	22
-	metal	internal	yes	no	no	no	23
	metal	either	yes	HD Backup	no	no	22
	plastic	internal	no	HD Backup	yes	shareware	21
	pidotto	Incomu.		но васкар	700		
	plastic	internal	yes	SUM II	yes	SUM II, BMUG shareware, Platinum Flower	23
			M				
	plastic	internal	yes	DS Backup	yes	Silverlining, SilverServer, shareware	22
-							
	plastic	internal	yes	DS Backup	yes	Silverlining, SilverServer, shareware	not tested <sup>4</sup>
	metal	internal	yes	HD Backup	yes	no	23
	metal	either	no	HD Backup	no	shareware	18
		internal	The Part of the Pa	Harris Harris		Ouiskans Lite DiekTen Mask-Baskans	23
	metal	internal internal	yes	no no	yes	QuicKeys Lite, DiskTop, MockPackage QuicKeys Lite, DiskTop, MockPackage	not tested <sup>4</sup>
	plastic	internal	yes	HD Backup	yes	no	19
	pidotto	and the second	100	THE BUCKUP	100		
	plastic	internal	yes	DS Backup	no	shareware/MacTree Plus	15
	metal	internal	no	HD Backup	no	shareware	22
	plastic	internal	no	HFS Backup	no	SCSI Floppy, Floppy Copy, Eureka DA	22
	metal	internal	yes	Turbo Back	no	Turbo Optimizer, Turbo Cache, Turbo Spool	23
	plastic	switchable	no	HD Backup	no	no	15
	metal	external	no	HD Backup	no	no:	18
	plastic	internal	yes	FastBack UD Pasture	yes	no	19
	metal	internal	yes	HD Backup	yes	no	21
11 11	metal	external	yes	PC Tools for Mac	yes	PC Tools for Mac	22
HE HE	metal	internal	yes	DiskFit	yes	SuperSpool, SuperLaserSpool, encryption	22
	plastic	internal	no	no	no	DiskTools Plus	22
	metal	internal	yes	no	no	no	not tested <sup>4</sup>
	metal	internal	yes	HD Backup	yes	shareware	22
					The same of		



although they still came in near the bottom of our speed tests. As an experiment, I retested the drives at a 2:1 ratio on the Macintosh II, again using the PageMaker save and folder-duplication benchmarks. Surprisingly, the drives performed at exactly the same speed as they had when run at a 1:1 interleave ratio. I then performed the same tests using an updated driver (version 2.2.6) that Ehman claimed would increase the drive's write speed 3.5 times. No matter what interleave I set, the drives still ran the tests at the exact same speed. Hold off on buying the Ehman drives—any bargain price you find won't be worth the frustration you'll have in getting these drives up and running.

We can't recommend Jasmine's DirectDrive, in spite of its nice array of software, excellent manuals, and sleek case. For the last several months, we've heard complaints from numerous customers about Jasmine's inability to service its hard disks and its problems in fulfilling new orders. Support lines are always busy and calls aren't being returned. Then, just as this article went to press, Jasmine filed for protection under Chapter 11 of the bankruptcy laws. Although the company claims it will honor all outstanding service claims and orders, it cannot do so until it receives more financing (see *MacBulletin*, May 1990). Order from Jasmine at your own risk.

The other hard disks to avoid are slow performers with little software and unhelpful manuals. Toshiba's MacKit doesn't even come with a hardware-installation manual. In all of these drives, formatting software is poorly designed, and in some cases (such as units from Relax and MacProducts) the driver doesn't work consistently. (Relax—which sells its driver to MacProducts—claims it was unaware of any problems. The company is working to fix the driver.)

We very nearly deleted the Westcom drives from this review. The company moved its head-quarters during the review period and didn't leave a forwarding telephone number. It also was not listed in directory assistance. We only found out about the move when someone from Westcom called to request that we return the company's hard disks. The whole fiasco seemed close enough to a Twilight Zone event to make me uncomfortable with the company's ability (and willingness) to provide good customer support.

#### **Portables**

Advanced Gravis, Crate, Dolphin, iDS, Liberty, MicroNet, Relax, Ruby, Tallgrass.

The minute you see one of these small, lightweight hard disks you'll want one. They are cheaper and quieter than standard hard disks from the same company. How did the vendors achieve these advantages? Simply by removing the power supply. Instead of hooking these units to a power outlet, you attach a cable from the hard disk to the Mac's floppy drive port.

Don't be too hasty in buying one of these portables, however. We found that these tempting beauties have severe limitations. For instance, they won't run on a Mac II or IIx because those machines don't include a floppy drive port. This alone makes the portables impractical for any application where you need to move megabytes of data between a variety of nonnetworked Macs.

You can buy an external power supply to connect a portable as you would a standard hard disk. But an external power supply defeats the portables' size and weight advantages. Plus, the power supply costs an extra \$70 or so. That's equal to what you save on the portable in the first place. Relax's Sierra 100 currently requires an external power supply—this drive can't power off the floppy drive as it is supposed to.

Even an external power supply, however, won't solve the problem these hard disks have in booting from a Macintosh IIcx or IIci with an internal hard disk. When a Mac boots up it starts with the peripheral with the highest SCSI address (6 is the highest, 0 the lowest). Because those Macs are so fast, you would normally turn on an external hard disk before turning on the Mac, thus ensuring that the platters are up to speed when the Mac calls on the drive. But since a portable takes its power from the Mac, you have to turn on both at once. Invariably, the portable's platters are not ready; the Mac passes them and goes to the internal hard disk, which is always set at a SCSI address of zero (0). You then have to restart the Mac to get the portable to mount. Even that scheme couldn't get the Aristotle HardPac and Tallgrass TravelPac to run on a Macintosh IIcx.

The only real advantages these portable hard disks offer are for Macintosh Portable users. Since a portable hard disk doesn't require a power outlet to work, you can use one with a Macintosh Portable while waiting in airports or working outdoors. Only portables from Dolphin and iDS offer a sleep feature that reduces power requirements to a bare trickle whenever the Macintosh Portable is idle for a while. Overall, we see no real reason to buy one of these units over the slightly bigger (but still small) hard disks like the EMAC Impact, FWB PocketHammer, La Cie Cirrus, Liberty 100, or Maxcess V-Series.

#### A Bit More to Know

All of the hard disks we tested used drive mechanisms from one of several vendors—usually Quantum, Seagate, or Connor. You can draw general conclusions about a product's performance once you know which mechanism it uses (Quantum-



EMAC's Impact, FWB's Pocket-Hammer, Storage Dimensions' MacinStor, and Ruby Systems' StarDrive

based units are generally the fastest, for example), but the efficiency of the vendor's software driver also counts. The Quantum mechanisms have a solid reputation for reliability (despite the seek problems these drives had last year) as do the Wren drives from Seagate (these drives are produced by Imprimis, which is now a part of Seagate). More recently, *Macworld* has heard good reports from users and dealers on mechanisms from Connor. Still, you'll want that reputation backed by a vendor who offers good service and support either to you or to your dealer.

Quantum-based hard disks are also a bit more expensive than products from other manufacturers. Some companies sell hard disks with different drive mechanisms at different prices (these are all listed in "Hard Disks Compared"). With these companies you can specify which mechanism you want. Other companies, however, sell hard disks that contain different mechanisms for the same price. These companies don't always know which units they will have in stock when you order, so they frequently cannot comply with requests for particular mechanisms. Buy these hard disks for their support, software, and case design rather than for performance statistics.

Mac hard disk buyers have reason to be pleased. Prices have dropped while quality has risen. Although no unit scores perfectly in every category, some, such as our top-picks, come closer than did hard disks in the past.

See Where to Buy for contact information.

# Calling

# THE INSIDE LINE ON SIX GENERAL-PURPOSE TELECOMMUNICATIONS PROGRAMS

by Larry Loeb

ilently and inexorably, data networks are growing every day. Business has for some time seen how much can be accomplished with computer-to-computer communications. Now individuals are realizing that with a Mac, a modem, and the appropriate software, they can take advantage of information services available by telephone.

Whether it's a local bulletin board service (BBS) or a commercial information service you're tapping into, you need a way to channel the information you want into the Mac. That's where telecommunications programs come in. Telecom programs both control what goes on between Mac and modem, and act as the intermediary between the Mac and the computer on the other end of the telephone line.

I looked at six of the most popular general-purpose telecom programs—Macknowledge, MicroPhone II, Smartcom II, VersaTerm-Pro, White Knight, and Zterm—to see what each offers. To review the programs, I used my Mac Plus with 2.5 megabytes of RAM and two U.S. Robotics Courier HST Dual Standard 9600-bits-per-second (bps) modems.

Most BBSs and information services communicate using text characters, and all of these programs support such text-based services. Some commercial information services, however, have developed software that lets you access information with

the conventional Mac interface instead of text command sequences (see "Picture Perfect").

#### **Getting Connected**

The main purpose of communications software is getting you connected. To do that, the software has to be compatible with your modem. The easiest way to ensure compatibility is to make sure that the modem is Hayes-compatible, that is, it understands the Hayes AT command set. The Hayes command set is the standard method for communications programs to control modems. If you have a nonstandard or highspeed modem, or if your phone line goes through a PBX system, compatibility is something you need to pay particular attention to.

(For more information, see "Choosing a 2400-bps Modem," *Macworld*, May 1990, and "Getting Started with Communications," *Macworld*, May 1990.)

Macknowledge, MicroPhone II, Smartcom II, VersaTerm-Pro, White Knight, and Zterm all work with Hayes-compatible modems. For those of you who don't have Hayes-compatible modems, Macknowledge and MicroPhone II give you the option of selecting or writing special drivers.

Once the Mac and modem can talk to each other, the next step is to make sure that setup can talk to the remote modem and computer you're



# Information

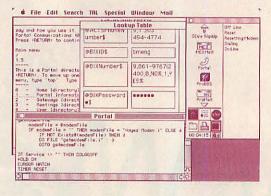


dialing in to. Whether that remote computer is a stand-alone Mac or an IBM PC, a BBS or an information service, a minicomputer or a mainframe computer, you must make sure that its communications parameters match those on your setup. Those parameters—bits per character, parity, and stop bits-ensure that the two computers are speaking the same digital language. All of the software I looked at lets you set these communications parameters.

#### **Terminally Happy**

Telecommunications software has to do more than just connect a Mac with another computer. You need an accurate display of the information the remote computer is sending to you. You also want to make sure the remote computer understands the commands and data you're sending to

Macknowledge In Macknowledge, a list of scripts appears in the Control Palette. The Lookup Table maintains ID, password, and telephone number information; the Macknowledge window is the terminal screen. The active window shows a simple TAL program.

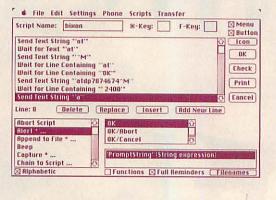


# MicroPhone II Thanks to Micro-

Phone II's script editor, writing a script in MicroPhone II is really easy. All you have to do is select commands and functions from scrolling lists, and fill in the blanks.

#### Smartcom II You can see how icon-oriented the interface to Smartcom II is by looking at the bottom of the screen. Because you write scripts by clicking on icons, autopilots aren't as powerful-but they

work without a hitch.



#### File Edit Connection Settings Autopilot Special 1:10:45 PM Call Progress Setting up Distance of the last Smartmodem Waiting for 4000 b Now dialing 19,861-9767 Waiting for: Tries To Go: 1 Retry Connected at: Concel

it. To do these things, the Mac must be able to mimic a display device the remote computer is familiar with. And this brings us to the topic of terminal emulation.

The emulation you choose depends on the service (or computer) you call. All the software I looked at supports a variety of terminals; the most commonly supported ones are teletype emulation (TTY) and VT100.

TTY is the simplest—some people might say the dumbest—of all terminal emulations. It's not much different from a typewriter, except it displays data on a computer screen instead of paper. The English-language characters used by TTY (and most other terminals for that matter) are defined by the ASCII character set.

By supporting VT100 or VT102 emulation, a program can make a Mac function like the Digital Equipment Corporation VT100 terminal series. VT100 terminals are more sophisticated than TTY terminals. For example, they can print in specific regions on the screen (like the top or bottom) without disturbing other parts of the display; TTY terminals, in contrast, just spew out lines of characters. Since most electronic services support it, VT100 terminal emulation is a good thing to have. I use this terminal setting almost exclusively.

#### **Capturing Information**

Chances are you'll probably want to save some of that text scrolling across your screen. Telecom programs have a screen buffer that temporarily holds incoming data. You can copy that information and paste it into another file. With the exception of Smartcom II and Zterm, all of the communications programs reviewed here let you select text and save it as a table to import into a spreadsheet.

But there are other ways to save online information. For example, you can save text to a capture buffer, a separate file you create on disk. Doing this puts all the information into one or more stand-alone files without continual cutting. copying, and pasting. You can also print text line by line, in some cases page by page, as soon as it's received by your modem.

Personally, I use file-capture capabilities in communications software more often than printing capabilities, because I often need to move files from my Mac to my Z88 laptop. But for sharing information, paper is still the best way. So don't ignore printing capabilities in communications programs.

#### **Downloading Files**

To capture more than text—for example, applications or formatted files such as PageMaker documents-your communications software must first support what is called MacBinary mode. Mac-Binary ensures that a downloaded Mac file or application turns up on your desktop as an icon you can double-click to open.

You also have to make sure that the file gets received without any errors. By using one of several *error-control* protocols with MacBinary, you can easily download error-free files from a remote computer, BBS, or information service.

Xmodem and Ymodem Because it's almost universally supported in one form or another on all computer systems that transfer information,

support for the Xmodem protocol is absolutely necessary in a Mac communications program.

There are two main variants of Xmodem. The *classic* Xmodem protocol sends information 128 bytes at a time. The sending computer then waits for an acknowledgment from the receiving computer that information has been

received correctly. The 1K version of Xmodem sends 1024 bytes at a time instead of 128 bytes.

As a result, a lot of Xmodem transmission time is spent waiting for acknowledgments. But Xmodem works, even over noisy phone lines. Ymodem is an extension of Xmodem that permits *batch* transfers. Batch transfers let you group multiple files together and send them with one command.

Zmodem Zmodem is a much more efficient filetransfer protocol than Xmodem. In fact, based on characters transferred per second, Zmodem routinely beats out Xmodem by a factor of more than three to one. Unfortunately, not all information services support Zmodem file transfers (two that do are BIX and GEnie). If you often transfer files modem to modem, however, look for Zmodem support in your communications software. It will save you time, and as a result, cut down on your phone bill.

Finally, there's another protocol that may pop up. Kermit, developed by Columbia University, is marginally faster than Xmodem. Kermit is available on many minicomputers and UNIX systems, so you will want to make sure your communications software supports it if you transfer files between a Mac and those types of computers.

#### **Scripts and Macros**

To get onto and around on an online service, you type text commands, which don't usually vary from session to session. If you had a communications program that did the typing for you, it could eliminate typing errors. It would also save you from having to remember all the commands necessary to navigate that service.

That's where *macros* and *scripts* come in. Generally, a macro enables you to send a text string or execute a telecom command with one simple menu or keyboard shortcut. For example, a macro might be a specific command—such as "get mail." A script usually lets you perform a series of actions with one single command. You could write a script to dial a service, log on, download any messages waiting for you, and then log off. Some programs even let you assign a script to a menu item, #-key combination, or button.

By the way, some programs use different terms. Smartcom II uses *autopilot* to refer to both scripts and macros; VersaTerm-Pro calls its

macros command sets.

If you plan to do a lot of scripting, you'll be glad to know that some communications programs generate scripts automatically. Macknowledge, MicroPhone II, Smartcom II, VersaTerm-Pro, and White Knight can all "watch" while you perform a task. The program then records the

prompts, your responses, and so on, necessary to accomplish that task in a script. Having this handy feature means you never have to write a script from scratch. Keep in mind, though, that a recorded script isn't always the optimal script. You may have to edit it further to get exactly what you want.

Now that you know what the features are, let's take an in-depth look at what each telecom program offers.

#### Macknowledge

cripts and

macros make

telecommunications

easier

First let me say this: Macknowledge is not your typical general-purpose telecommunications program. Instead, it's a stand-alone set of scripts written for general-purpose telecom. More accurately, Macknowledge is a *run-time* version of Prometheus's Acknowledge, a framework or development environment for serious (and I mean very serious) telecommunications professionals.

Macknowledge is the only program I looked at that can automatically configure settings for different modems, a handy feature if you have a nonstandard modem. Prometheus provides a set of prewritten scripts for a variety of information services—BIX, CompuServe, Dow Jones, GEnie, MCI Mail, and others.

You activate those scripts by clicking on icons for those services in Macknowledge's Control Palette. The first time you use a script, Macknowledge asks for a user name, password, and access telephone number for that script's service. If you don't know the access number, a unique Macknowledge feature can help: a table of phone numbers uses your area code to help you select the right number. I thought that was great. Unfortunately, the only time you can see that table is the first time you run a particular script. If you want to change phone numbers later in a script—or user names or passwords, for

that matter—you must do so in Macknowledge's Lookup Table, which maintains that information for scripts (see "Macknowledge").

Macknowledge scripts are written in Tele-communications Access Language (TAL), a full-featured programming language. Although the program offers a watch-me feature that records actions and then translates them into TAL code, I found that watch-me didn't work all the time. Sometimes my scripts worked and sometimes they didn't—but worst of all, I couldn't find a way to protect my password within a script. This was incredibly frustrating because it meant I had to learn TAL to use Macknowledge. A script editor called EZ-TAL tries to make writing or editing TAL scripts a point-and-click affair, but doesn't really succeed.

Aside from scripting, there were some other things that bothered me about Macknowledge.

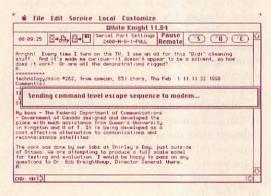
VersaTerm-Pro VersaTerm-Pro lets you define up to 24 macros in each of 2 read macro sets. For nent back example, you could have 1 macro set for Kermit, and another for VMS Mail. Assigning a macro a **Command Label** makes it appear in the Commands menu.

White Knight
Even though there
have been a few
changes to the user
interface, White
Knight still feels like
faithful ol' Red Ryder.
An area in the bottom
left corner of the
screen echoes any
command characters
you type for keyboard
shortcuts.

#### Zterm

Zterm's unique filetransfer log lets you see almost everything about downloaded files: when, how, time, size, and so on. There's even an efficiency rating based on the number of characters transferred per second.







First, it doesn't support Ymodem and Zmodem protocols. Second, unless you close it, the Control Palette floats above the Macknowledge window (the terminal emulator screen) all the time, blocking your view of that screen. Third, the way the supplied scripts are written, you can only log off services from Macknowledge's menu. If you log off manually, the program isn't smart enough to know that you've already disconnected, and tries to log you off again.

#### MicroPhone II 3.0

MicroPhone II 3.0 gets my vote as the most improved of the recent round of telecom-program upgrades. It now has a full suite of features, including support for Zmodem, ISO-7 international character sets, and optional password protection for documents or scripts. You also get a text editor DA that can manipulate text files under 32K in length.

Of the programs I looked at, MicroPhone II has the most extensive scripting abilities. To create a script, you can use either the program's Watch Me feature, import a text file as a script, or write a script from scratch. Editing a script is easy too, thanks to MicroPhone II's script editor. Depending on the command you select, the program is intelligent enough to help you complete that scripting command (see "MicroPhone II"). To learn more about scripting, you can always look at either the fully indexed, very readable manual or the copious sample scripts Software Ventures provides with the program.

You can create custom dialog boxes for scripts—a capability unique to MicroPhone II. Another unique feature is the program's ability to incorporate HyperCard external functions (XFCNs) and external commands (XCMDs) in a script. This means you can design and add custom functions to MicroPhone II that the Software Ventures gang never thought of.

My one big complaint about MicroPhone II is that it still has too few keyboard equivalents for commands. This problem has been fixed somewhat in version 3.0: you now can do things like quit, copy, cut, and paste using the standard keyboard shortcuts. But to perform more sophisticated tasks—for example, send or receive a file, or change file-transfer protocols—you still have to either make menu choices, click on an icon, or create your own macros.

#### Smartcom II

Smartcom II's attractive icon-based interface is likely to appeal to users with little or no programming experience. Where VersaTerm-Pro is stark and a little obscure, Smartcom II offers context-sensitive help at virtually any point—just click on the help button. (Neither MicroPhone nor White Knight offers any online help at all.) And

rather than requiring you to conquer a scripting language, Smartcom II lets you construct autopilots using icons at the bottom of the editing window (see "Smartcom II"). You can design a script to become either a menu choice or a button. I found that Smartcom II's autopilot feature worked flawlessly, generating scripts that worked without any editing. One unique Smartcom II feature lets two connected Macs, both running Smartcom II, send mouse-driven graphics back and forth.

Despite Smartcom II's icon-based interface, some small elements are counterintuitive. I went bonkers looking for a way to hang up the phone until I finally read the manual, which told me to click on the phone icon. My biggest problem with Smartcom II, however, is that it's limited to Xmodem transfers. Most people eventually need more than that in a general-purpose telecom program. I know I do.

#### VersaTerm-Pro

VersaTerm-Pro 3.1's strong points are its terminal emulation capabilities. It is the only general-purpose telecommunications program that emulates Tektronix 4010, 4012, 4014, and 4015 graphics terminals and Data General's D200 terminal series. VersaTerm-Pro's VT100 emulation is excellent, providing direct support for UNIX's VI and EMACS editors. Indeed, VersaTerm-Pro is the program I choose when doing heavy work on a VAX.

VersaTerm-Pro is also the only program I reviewed that currently supports Apple's Communications Toolbox, which will be included in System 7.0 (until System 7.0 arrives, you install the Communications Toolbox as an INIT). The Communications Toolbox is a set of common tools—routines, functions, and features—that a program uses to provide data-connection, terminal-emulation, and file-transfer capabilities. (Several other vendors, for example Software Ventures, have announced their intention to support the Communications Toolbox.)

According to a draft manual I saw, VersaTerm-Pro will not use Communications Toolbox terminal-emulation tools. VersaTerm-Pro already provides text and Xmodem file-transfer capabilities, so Synergy Software has elected not to offer those Apple Communications Toolbox tools. However, Synergy does plan to ship the serial- and modem-connection tools—in addition to any other useful tools that crop up in the future—to VersaTerm-Pro users as soon as they become available from Apple.

In keeping with its terminal-emulation bent, VersaTerm-Pro offers good macro capabilities, but no scripting. Synergy supplies some prewritten macro sets (for VMS Mail, UNIX Mail, and Kermit, for example), and you can write your own using VersaTerm-Pro's Automatic Macro Define feature. The macro language is primarily based on textand control-character entry (see "VersaTerm-Pro"). Help buttons are available in most dialog boxes, but there are few keyboard shortcuts. In addition to the lack of scripting, some other missing features make VersaTerm-Pro less useful as a general-purpose telecom program. For example, it doesn't support the 1K variant of Xmodem, nor does it support Zmodem.

#### White Knight II

White Knight is a renamed—and updated—version of Red Ryder 10.4. And if you like using

#### PICTURE PERFECT

nlike general telecommunications software, custom software provides front ends tailored to specific information services. And that customization translates into more Mac-like interfaces to those services—a big difference from the text-based interfaces usually encountered on bulletin boards.

Two examples of front-end programs are Desktop Express and CompuServe Navigator. Desktop Express helps you navigate the MCI Mail service; CompuServe Navigator lets you bypass the sometimes tortuous CompuServe interface to get mail and follow threads. Both simply put a graphical user interface on top of the usual text-based interfaces. While you can log on to MCI Mail and CompuServe with a general telecommunications package, that isn't an option for Connect, America Online, or Prodigy, For each of these information services you must use dedicated telecom software.

The Connect Information Service was the first public online service to provide a noncharacter-based interface. (AppleLink was actually the first, but it's open only to Apple developers, employees, and dealers.) Connect software translates Mac screen actions into online commands. To enter and leave forums and download files, you simply open and close the right folders and files; to connect, read mail, disconnect, and so on, click on various icons.

America Online (originally called AppleLink Personal Edition for the Mac) is similar to Connect in execution; indeed, the two services feel a lot like each other even though they don't look alike. In America Online, you click on department icons to get to topic folders. Then you open and close folders to find messages or download files. Although America Online doesn't let you download files in the background, it does provide online conferencing and a sophisticated chat feature so you can "talk" with other users in real time.

Then, there's Prodigy. Yes, there are graphics and you can use the mouse, but still, Prodigy gets the dubious distinction of being the most un-Maclike Mac telecom program I've seen (maybe because IBM is one of the Prodigy sponsors?). All menus and DAs are inactive so you can't cut, copy, or paste any screen information—and you can only print when there's a print button on the screen.

keyboard shortcuts, White Knight is your program. You can pretty much do everything without ever touching the mouse. Keyboard commands are grouped together by function. For example, typing \mathbb{H}-F brings up the group for file-transmission commands; you then type S to send a file or R to receive one (see "White Knight").

Other enhancements to White Knight include Zmodem support and a reworked user interface. The scripting language has been somewhat improved by the addition of new script commands that reduce the need for "panic" options within a script (panic is what the program does when it can't carry out an action after a predetermined time period). Another addition to the scripting language is support for external commands, or RCMDs. White Knight RCMDs are similar to HyperCard XCMDs but proprietary; you can't use an XCMD as an RCMD.

White Knight lets you decide whether you want to capture incoming text streams with or without line feeds at the end of each text line. Smartcom II, VersaTerm-Pro, and MicroPhone II assume you don't. And with the exception of MicroPhone II, White Knight is the only program

that lets you create a mini-BBS so that other people can download files from your Mac.

White Knight lets you record actions for scripts and macros. Unfortunately, White Knight's recorder feature was disappointing. To make usable scripts I had to manually insert "wait" statements between certain actions, just as Red Ryder used to make me do; I didn't have to do this with Smartcom II or MicroPhone II. While I had no trouble printing from within the other telecom programs, I did have a problem printing to my Hewlett-Packard DeskWriter from within White Knight. While there was a workable solution—copying text into a text editor that did print to the DeskWriter—it was still annoying.

#### Zterm

Zterm is a \$30 shareware program, but you shouldn't let that keep you away from it. (Red Ryder garnered its fame as a shareware program too.) Zterm's primary strength is its support of Zmodem—it also offers all the other major file-transfer protocols. It's a cheap, fast way to send and receive files.

Zterm's macro keys let you keep communi-

TELECON	FEATU	RES				
STATE OF	Macknowledge	MicroPhone II 3.0	Smartcom II 3.01c	VersaTerm-Pro 3.1	White Knight II	Zterm .85
Company	Prometheus	Software Ventures	Hayes Microcomputer	Synergy Software	The FreeSoft	David P. Alverso
	Products		Products		Company	\$1000
Maximum transfer rate	57,600 bps	57,600 bps	38,400 bps	19,200 bps	57,600 bps	57,600 bps
Terminal emulation						
TTY						
VT100		•1		•		
VT52						
Other	Minitel,			Tektronix 4105,		
	Prestel		ALCOHOLD IN	Tektronix 4014,		
				Data General D200,		
				VT220		
Fext capture						
To disk				•		
To printer					•	•
Copy table	( ) ·	•			•	
Text only		•	•	•	•	
File-transfer protocols					-	
Xmodem				128 only		
Ymodem				1K		F-71-1
Kermit					•	
Zmodem						
Background transfers		•				
Macro mechanism	Scripts <sup>3</sup>	scripts	autopilots	command sets	macro buttons	macro buttons
Script mechanism	Scripts <sup>4</sup>	scripts	autopilots	command sets	autopilots	
Learn mode						

Also available through BBSs. <sup>2</sup> Through VT102 emulation. <sup>3</sup> Through service files. <sup>4</sup> Through Connections files.

cations settings for different bulletin boards in one document. Smartcom II, for example, makes you save the settings for each information service in a separate document. Zterm is the only program that automatically logs file transfers for

you, which is useful if you send or receive a lot of files (see "Zterm").

I found Zterm to be very stable overall, with one exception. When you launch the program, it opens a buffer that stores all text sent to and received from the remote computer; the more text there is, the larger the buffer grows. When the buffer grows to over 300K, Zterm sometimes unexpectedly quits under Multi-Finder. Increasing the preferred

application size in the Get Info dialog box does not help because Zterm grabs memory as it goes. You can, however, clear the buffer easily within Zterm. I should point out that a buffer that size is unusual—usually the result of logging on to seven or eight different services and reading a lot of information.

As of version .85 (the one I used), Zterm offers no scripting capabilities (though it does have macros), and there is still a bit of work to be done on the VT100 terminal emulation. In addition, the user interface can be confusing, so make sure that you read the accompanying documentation files.

#### **Picking What's Right**

When I started this article, I was an admitted White Knight snob. I still think White Knight is the precision tool of communications programs. Its scripting language gives you lots of leeway to modify the program, but you are expected to understand what you are doing. White Knight's manual assumes you're fairly familiar with telecommunications and with programming concepts. In the right hands, White Knight offers unparalleled performance; in the wrong hands, it's very unforgiving.

As a general-purpose telecom program, Macknowledge didn't offer me anything that another program couldn't do as well or better. Writing a Macknowledge script really requires some programming experience with a language such as Pascal. And all the different types of Macknowledge documents (phone journal, lookup tables, scripts, and general documents) make things very confusing for users. Whether or not you like Macknowledge depends on how much you like those supplied scripts, and on how much you like Acknowledge's general framework. I definitely didn't like the scripts. I can see how an experienced TAL programmer could develop a very

nice Mac interface (like Connect's, maybe) for an information service using Acknowledge, but I don't recommend Macknowledge for general-purpose telecom.

II of the programs

get you

online. The differences

have to do

with style and user

interfaces.

On the other end, Smartcom II is the sim-

plest to use of all the telecom programs. And, most important, it's bulletproof. I think it would be hard for anyone to make a non-recoverable mistake with this program. I know many folks who are very happy with Smartcom II and have used it for years without incident. I miss the Zmodem protocol but find Smartcom II's ease-of-use quite seductive. If I let myself, I could succumb quickly.

VersaTerm-Pro is a great tool for working with VAXs or when you want Tektronix terminal emulation. In fact, a lot of people think there's currently no finer tool for getting at a VAX from a Mac than VersaTerm-Pro. Once you're logged on to the remote computer, it's fine. It's the getting there that VersaTerm-Pro doesn't help you much with: most notably, the program lacks the scripting a lot of people want for working with BBSs or commercial information services.

The program I now turn to for most of my day-to-day communications is Zterm. It's quick to load, quick to use, and supports Zmodem—exactly what I want to see in a telecom program. I don't mind Zterm's lack of scripts; I just write a few macros to do log-ons. And because I download many files from information services and BBSs, Zterm's file-transfer log more than compensates for any of the program's deficits.

For general users, though, I have to recommend MicroPhone II. It has come a long way since I last used it and was the best surprise by far of all of the telecom programs. I was impressed by its logical and well-executed interface; it offers the most-common terminal emulations and all the file-transfer protocols. Its scripting feature is powerful and friendly at the same time. Nonprogrammers will find writing scripts a lot easier in MicroPhone II than in White Knight; programmers can easily take advantage of script-language extensions and utilities. Unlike some of the other general-purpose programs, MicroPhone II gives you the choice between easing into telecommunications or diving in. That makes it a winner.

See Where to Buy for contact information.

Larry Loeb is the editor of the Macintosh Exchange on the Byte Information eXchange (BIX), but his day job is being a dentist.

# An investigation of Macintosh electronic



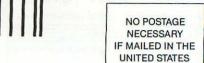
# E-MAIL

A Postal Inspection



File	Edit	View	Special -	
			Macworld Savings!	
		e a year (12 issue annual cover pr	es) of MACWORLD for only rice of \$47.40.	The second secon
Name				- bomst
Company				- home
Address				
City / State / Zip				— For
	r delivery of the fir		OSed. tion price is \$30 for 12 issues. The cover ease add \$18 for shipping.	price is You!

**Save** \$23.40



#### **BUSINESS REPLY MAIL**

FIRST CLASS

PERMIT NO. 1262

BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

#### **MACWORLD**

Subscription Department P.O. Box 51666 Boulder, CO 80321-1666



### mail software

lectronic mail (E-mail) has quickly become one of the most important applications for networked users. And like other network services—for example, file servers and print spoolers—the success of an E-mail system depends on how well it meets the requirements of users and network administrators alike.

Certainly, both users and administrators are interested in a system's functionality. But often the two have different points of view on what's required from an E-mail system. For example, a user wants an E-mail system that is easy to use; an administrator wants a system that's easy to set up and maintain, is reliable, and can be used on large networks. Then there are important control issues to consider. Who should define address lists—a user or the administrator? What mail forms should be used—anything a user can dream up, or only forms that meet corporate standards?

To help you pick an E-mail system, I'll take a look at how features of current Macintosh E-mail systems address user and administration concerns. I'll focus on the products that currently use a Mac as the mail server: CE Software's QuickMail, Microsoft's Microsoft Mail, and TOPS' InBoy.

Not all E-mail systems that allow a Mac to send and receive mail (in other words, act as a client) require a Mac as a server. Two systems, Dayna Communications' DaynaMail and cc:Mail's cc:Mail, can run on Mac servers; however, both require PC-based servers to take advantage of their most sophisticated features. Another program, WordPerfect Office, will offer E-mail—and other network services—to Mac, MS-DOS, and VAX users when it's available (see "The PC Invasion").

### What's Important in E-Mail?

To a user, the answer to the question is obvious: E-mail should be easy to use. But let's see what lies beneath that deceptively simple answer.

Addressing mail to anyone on the E-mail system should be easy. Finding someone's E-mail address shouldn't be a struggle, nor should you have to know which mail server is responsible for processing that person's mail. And, of course, you should be able to keep address lists for the individuals, or groups of individuals, you most often send mail to. Options such as status logs and customizable forms can also make using an E-mail system easier. Finally, some users, either in field offices or traveling on the road, may want remote access to E-mail too.

Addressing With InBox, the manager and each individual user can define address lists, but only the manager can create *groups* of addresses. To compensate, InBox lets users create their own *address books*, which can include names from any InBox server. A user can effectively define a group by putting several names into an address book, and then selecting all those names (via InBox's Select All command) as the address list for an E-mail message.

One unique feature of InBox is its support for *aliases*. Aliases let you enter a new name for anyone listed on the mail server when you put that person into an address book. For instance, in your InBox address book, your boss could be listed as Boss or your chief programmer as Head Hacker.

QuickMail, on the other hand, permits any user to define personal address lists or address groups. All you have to do is select names from any QuickMail servers on the network. This flexibility posed some problems in earlier versions of QuickMail: to update address lists, you had to manually query each server to get any address changes. And since each QuickMail server can hold multiple MailCenters—such as one for network communications and another for a telecom gateway—you had to query not only each server, but each MailCenter as well.

Happily, QuickMail 2.2 provides a nearly automatic solution for the updating problem. A facility called NameServer periodically polls all QuickMail servers and keeps track of all the latest valid addresses. Instead of going to each MailCenter, users just query NameServer with a new QuickMail command, Verify Addresses. In addition, a Find button in QuickMail's address window lets you search NameServer's database by first

name, last name, or department for the address of any QuickMail user. Only the first few letters of the name are necessary to guide the search.

Unlike InBox or QuickMail, Microsoft Mail takes a more centralized view of E-mail. Thus it places more restrictions on users. Only the administrator or manager for each Microsoft Mail server can define user addresses or address groups. While this approach promotes addressing uniformity across workgroup or departmental boundaries, it prevents you from customizing the system to make it easier to use.

Microsoft Mail does, however, provide some features that can make E-mail addressing easier on large networks. Because Microsoft Mail automatically updates the address lists on each server, you always see an up-todate *global* directory of all the E-mail users on the network. If seeing all the users is overwhelming (and it can be for large networks), you can switch to a *local* mode and see only the names of those users attached to the same server as you are. There's also a search mechanism to help you find someone's address; just type the first few

letters of a name, and Microsoft Mail highlights the correct address in the address list.

Tracking Mail The most common method to check if mail you've sent has been delivered or read is to request a return receipt. InBox, Microsoft Mail, and QuickMail all support that option. But if you want more specific information on message status, only QuickMail can help you.

QuickMail maintains a mail log for every user that shows whether a sent message has been read or is still unread, and whether it has been printed, deleted, or filed. However, be forewarned: if you tell QuickMail to keep message information in the log for a long time (for example, 30 days after sending), or if you send lots of mail, the log can get very large. And the larger the mail log, the more slowly QuickMail loads.

File Enclosures Attaching files to a message is an easy and convenient way to move work files around among members of a workgroup. It's certainly easier than setting up a file server or pasting text into a message.

InBox, Microsoft Mail, and Quick-

Mail all permit file enclosures, between two Macs and between a Mac and PC. Although you enclose a file in a mail message pretty much the same way in all the E-mail systems, there are some notable differences. InBox and Quick-Mail both permit multiple file enclosures per message; Microsoft Mail permits only one.

When it comes to sending files to PCs, only QuickMail automatically assigns DOS extensions to files sent from a Mac. Before you send a file to a PC user with Microsoft Mail, Microsoft recommends that you rename the file according to DOS conventions (8 characters long, with DOS extensions) to make it easier for the PC user to recognize the file you've sent. You should follow the same advice with InBox.

Mail Forms InBox has a very limited repertoire of message forms: a basic message form and a phone message form. Microsoft Mail and QuickMail, on the other hand, offer customizable forms, but differ in how they implement the feature.

In keeping with its centralized approach to E-mail, Microsoft Mail stores all forms on the mail server.

### THE PC INVASION

ow that more Macs are living side-by-side with PCs, DOS-based E-mail vendors have finally taken note of the Mac. Several E-mail packages that run on MS-DOS servers now support Mac clients.

One system that has long supported both Mac and DOS clients is 3Com's 3+Mail. 3+Mail runs on 3Com's own server machines, but you can only administrate it from a PC. But with the variety of gateways to other systems and services provided by 3Com, Mac 3+Mail users can access some of the largest mail systems.

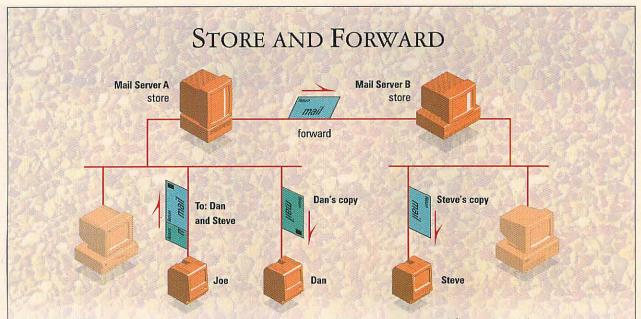
cc:Mail is another product that now supports both DOS machines and Macs. One of the more popular E-mail systems in the IBM PC world, cc:Mail includes such features as graphics file exchange between PCs and Macs, as well as a fax gateway. While Mac-only local area networks (LANs) can make good use of cc:Mail, many of its features—gateways and fax sending and receiving, for example—require a PC server.

DaynaMail, a newer entrant in the E-mail market, behaves much like cc: Mail. On a Macintosh-only LAN, DaynaMail is a simple, easy-to-use mail system without many frills; there are no customizable forms, for example. You can install Dayna-Mail on a network in one of two ways: server-based and node-

to-node. Because DaynaMail is based on the Message Handling System (MHS), you can link a DaynaMail server to another MHS-based server to access gateways or other LAN E-mail systems. MHS is a store-and-forward mechanism developed by Action Technologies, and is included in Novell's Netware. DaynaMail's unique, node-to-node E-mail system is designed for LANs without a server. Mail can be sent only if both the sender and receiver are logged on to the network. Despite that limitation, the node-to-node configuration can prove useful in small workgroups.

The Coordinator, from Action Technology, has been described as a work-management and communications system that happens to include E-mail. Although a full-function Coordinator client is not yet available for Mac users, Action Technology does offer MacAccess, a DA. MacAccess allows Mac users on a Novell Netware network to send and receive mail to other Coordinator users via a Netware server.

Another newcomer to Mac E-mail is Network Courier, from Consumers Software. Consumers plans to offer a Mac client for Network Courier soon, which runs on MHS-based servers. With it, Mac clients will be able to take advantage of Consumers' gateways, which include gateways to X.400, PROFS, and MCI Mail.



Joe, who is logged on to Mail Server A, sends mail to Dan and Steve. In a store-and-forward E-mail system, Server A stores mail for both Dan and Steve until it can deliver that mail. Dan receives his mail when he logs on to the network and Server A. Steve's copy gets forwarded from Server A to Mail Server B whenever Server A connects to Server B. That could be immediately, if both servers are on the same network, or later, if the connection is made by modem. Server B then stores Steve's copy until Steve logs on to that server.

While any user can design new forms using Microsoft's HyperCard forms stack, only the mail manager can install a form (via Microsoft's Forms Mover) on the server. Once installed, the form becomes available to all users of that server.

In contrast, QuickMail forms are stored on each user's Mac, not on the server. Using the QM Forms application, any QuickMail user can design and install personalized message forms. Should a recipient not have a given form, QuickMail sends the form along with the actual message. This approach does have one disadvantage; if too many users have their own customized forms, unnecessary increases in network traffic can result.

Remote Access Thanks to products from Shiva, Hayes, and InfoSphere, it's a relatively simple matter for someone with a modem to become part of an AppleTalk network, which allows a remote user to access the mail server just like any local user. However, due in part to the nature of AppleTalk protocols, network access via modem slows down E-mail system response time.

QuickMail offers two simpler, faster solutions for remote access to

its mail servers. First, you can use the QM Remote application on a Mac to dial a mail server directly via modem. Once connected, you can either send or receive mail. Second, you can use any terminal-emulation program (on a Mac or even an IBM PC) to dial into the mail server. You then get a simple text-based menu system for sending and receiving mail.

### **Near-Mindless Management?**

For E-mail system managers, installation and maintenance issues are key. You have to worry about propagation of address lists, storage of messages and files, and reliability. If you handle multiple E-mail servers, you want to make sure those servers communicate when they should. And nowadays, the appeal of a Mac-based E-mail system may depend on how seamlessly it can exchange mail with existing corporate E-mail systems (see "Gateways to the World").

Server Setup You can install In-Box two different ways, either as a Mail-Server Message Center or as a File-Server Message Center. The Mail-Server Message Center relies on In-Box software to send messages between users; it can only be installed on a Mac. The File-Server Message Center, meanwhile, uses existing fileservice networks (AppleShare or TOPS) to send mail. It can be installed on any computer that runs the TOPS file server, such as a PC, VAX, or Sun workstation.

InBox handles up to 20 users per mail center. If you need more capacity, you have to use InBox Plus, which permits up to 100 mailboxes per message center, as well as more than one message center on a server. InBox Plus also provides gateways to other mail systems, a capability the plain vanilla InBox doesn't have.

Microsoft Mail does not depend on a file server, but can be installed to run in the background on Apple-Share or TOPS servers. The Microsoft Mail server can also run in the background on any networked Macintosh. Frankly, I do not recommend the latter installation, unless you want to make an enemy of the person who works on that Mac.

Like Microsoft Mail, QuickMail doesn't require the existence of a file server, but will run in the background of an AppleShare or TOPS server. QuickMail has its own server software, QM Administrator, to maintain its

### **ELECTRONIC MAIL FEATURES**

A TOWN OF THE PARTY OF THE PART	DaynaMail 1.0	InBox 3.0	Microsoft Mail 2.0	QuickMail 2.2	WordPerfect Office
GENERAL					
Architecture	store-and-forward †	store-and-forward	store-and-forward	store-and-forward	store-and-forward
Client Macs supported	Mac Plus, SE, II	Mac Plus, SE, II	Mac Plus, SE, II	Mac Plus, SE, II	Mac Plus, SE, II
Server-server communications	MHS	via Router program	internal	internal	Internal
Remote access to server	indirect via network	indirect via network	indirect via network	direct via modem	direct via modem
Copies of message stored	1 per addressee	1 per addressee	1 per message	1 per addressee	1 per addressee
Server type	MHS, AFP, TOPS	InBox, AFP, TOPS	Microsoft Mail, AFP	QuickMail, AFP, TOPS	WP Office, TOPS, AF
File storage on server	HFS	proprietary mail files	proprietary database file	HFS	HFS
Public messages	0	•	0	•	•
Mail polling	client activated	interactive	interactive	interactive	interactive
Message types	text	text	text, graphics, voice	text, graphics, voice	text, graphics
Encrypted messages	0	0	0	0	•
Customizable forms*	0	0	M	U	U
Address lists*	M, U	M, U	M	M, U	M, U
Group addresses*	U	M *	M	U	M, U
Global address updating	manual	automatic	automatic	manual <sup>§</sup>	automatic
Aliases	0	•	0	0	
CLIENT					
Туре	DA	application, DA	DA	DA	DA, application
Number of enclosures	1 3 1	no limit	1	16 (+ clipboard)	no limit
Forwarding		•	(	•	
Delivery receipt	•	•	•	•	•
Bad-mail notification	•	•	•	•	•
Delayed mailing	0	0	0	•	
Conferencing	0	0	0	•	•
Online help	0	•	0	•	•
Individual address lists		•	0	•	•
Priorities	2	2	2	5	3
Import, export address book	Ollin	Q	0	0_00	
Local message-storage format	mail	text, mail	native	native, mail	native, mail
User mail-status log	0	0	0	•	•
User-defined aliases	0	•	0	0	0
ADMINISTRATION					
Server administration	at server	from workstation	from workstation	at server	server, workstation
Usage log at server	0	0	•	•	• 1
Controlled access to gateways	varies with gateway	0	•	varies with gateway	0
Special addressees	•	•	•	•	•
Custom installation	0	0	0	•	0

●= Yes, ○= No. \*M = manager-defined; U = userdefined. 1 DaynaMail is also available as a node-to-node mail system. If Importing and exporting is supported in node-to-node version. \* User can define address book and mail to all recipients in book simultaneously. 

\* User must query global address list for updates.

MailCenters. If for some reason you prefer to use AppleShare file services to control a QuickMail MailCenter, you can request a special version of Quick-Mail from CE Software. Despite this option, you're better off using the standard QuickMail software.

Architecture All three E-mail systems use a store-and-forward architecture. That means mail that's undeliverable either because the recipient isn't connected to the network at the time, or because the recipient's server is unavailable—is held at the originating server. When unreachable users and/ or servers become active on the network again, held mail gets forwarded accordingly.

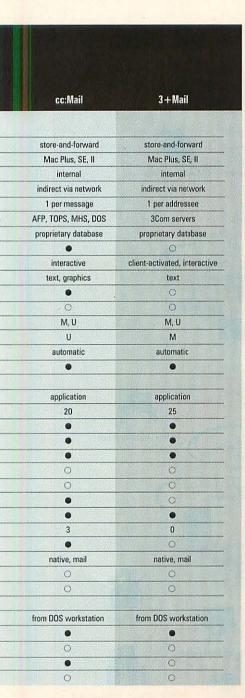
Rather than incorporate server-toserver communications in the InBox Plus Message Centers, InBox Plus includes a second program, Router, which controls communications between different servers. Using it, you

can design redundant routes between

servers for added reliability.

In contrast, Microsoft Mail servers maintain server-to-server communications on their own. Not only do servers store and forward messages destined for other servers, but they also exchange user lists to form one large global address list. Every user has access to that list for addressing mail.

QuickMail also maintains serverto-server communications internally;



however, address lists are specific to each MailCenter on a server. To ensure that a network-wide database of addresses exists, you install Name-Server, a separate application, on any Mac on the network. You can set up NameServer to query all designated MailCenters for address lists at regular intervals. You can even use more than one NameServer, for example, if you wish to divide up the database for different workgroups.

Server Administration Once a Microsoft Mail server is set up, you can administrate it from any Mac on the network. This administration scheme is convenient because you can easily maintain all servers from one Mac—even if you have to use the Chooser to select each server one at a time.

Also included with Microsoft Mail is Microsoft Mail Administrator, a program for generating reports about mail servers. With it you can list servers, local users, local groups, and global users. A very detailed report on server usage includes information such as the number of messages and file enclosures in each user's mailbox and the amount of owned and shared space on the server. These reports should be sufficient for any manager to maintain mail servers.

As with Microsoft Mail, you can administrate InBox mail servers from any computer on the network. Using an application called InBox Admin, you can add users, create mailboxes, and so on. However, InBox offers no special administration tools to generate reports about disk space or the number of messages stored per user.

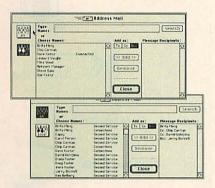
All administration of a QuickMail mail server takes place on the server itself via the QM Administrator application. QM Administrator generates a variety of reports, among them Serial Number and Dead Mail. You can also get a detailed mail-usage report for each user on a MailCenter; this report lists the user's name and address, the number of mail-log entries and mail items, and the size of the mail log and mail items.

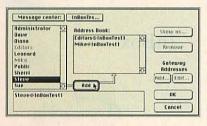
Mail Storage Microsoft Mail stores all messages and enclosed files in a single, proprietary-format database file on the server. While this scheme might offer performance advantages, it's also a case of putting all your eggs in one basket. If the file gets corrupted, everything's gone.

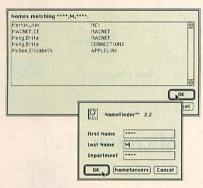
In contrast, QuickMail stores a separate copy of a message and enclosure for each addressee, using the Mac's Hierarchical File System (HFS). This does lead to some added requirements for server disk space, especially if large files are sent as enclosures. But if one file gets corrupted, it only affects one recipient.

InBox's storage method is, in

some respects, a hybrid. Like Microsoft Mail, InBox uses a proprietary database scheme to store sender and receiver information. However, like QuickMail, it stores one copy of a message—and any enclosed files—for each addressee.

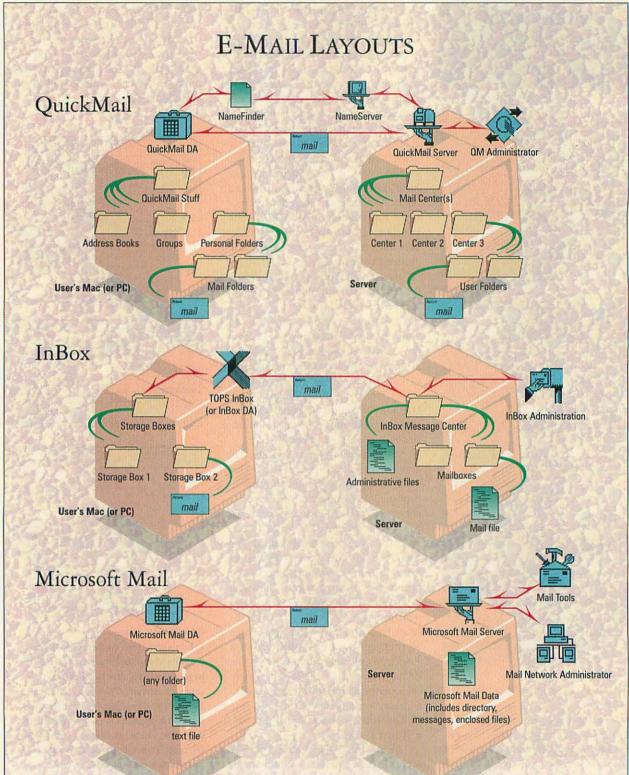






### Addressing the Issue

This composite from the three major E-mail programs shows how users can deal with the large address lists often found on large corporate networks. The two screens from Microsoft Mail (top) show how the global address list is simplified by restricting the list to those users on the Local server (upper screen). The center screen illustrates the creation of a personal Address Book in InBox, with the user selecting only those names of interest. The two bottom screens show how a QuickMail user uses the NameFinder to find the addresses of any user on any MailCenter (in this case, names starting with the letter M) by searching the database of addresses maintained by QuickMail's NameServer on the mail server.



This diagram depicts how a client Mac and mail server from the three major Mac E-mail programs interact. In each case, the product's own names for components are used. A folder icon represents an HFS folder on either the user's Mac (for mail storage, for example) or the mail server (for storing unsent and received mail, as is the case with QuickMail and InBox). A text file icon on the user's side means mail is stored as text only. An envelope means mail can also be stored in its original format for rereading, replies, and forwarding. Text files on the server usually mean that some component of the mail system is stored as a special file. Microsoft Mail stores all mail and user information, such as directories, in one large file.

### **GATEWAYS TO THE WORLD**

imple LAN-based E-mail systems may suffice for small businesses and for workgroups within large corporations. But often Mac E-mail users in large corporations need to exchange messages with other workers in the same company. Those other workers may use an E-mail system, such as VMS mail or PROFS, installed on a mainframe computer. Or two geographically separate offices may use MCI Mail, EasyLink, or AT&T Mail to send E-mail between their two LANs. In either case, mail gateways are necessary to handle the differences in message formats and user addressing.

QuickMail, Microsoft Mail, and InBox all offer gateways into systems that are used by large corporations. At this point, QuickMail has the largest number of different kinds of gateways. Microsoft is offering a few gateways for Microsoft Mail and promising more in the next months. By virtue of its support for MHS mail servers, DaynaMail can use a variety of gateways. TOPS, meanwhile, plans several gateways for InBox, the newest product on the market, which currently offers fewer gateway options than its competitors.

### **Evaluation Time**

Each E-mail vendor thinks that its product has certain features that make it better than the others. After working with InBox, Microsoft Mail, and QuickMail, here's what I think about how those features are implemented.

For addressing, it's a close call. I like QuickMail best because it offers the greatest flexibility in setting up address lists. But that reflects the fact that I consider user-defined address lists more important than automatic updating. Microsoft Mail's automatic global address updating scheme is better than QuickMail's.

Unlike QuickMail, Microsoft Mail lets you type an address, which can be more convenient than selecting one from an address book. If only Microsoft permitted user-defined address lists, it would have come out on top. InBox's alias feature is nice, but I consider its approach to user-defined address groups contrived, and not terribly intuitive.

For tracking mail, QuickMail is the clear winner. Microsoft Mail and In-Box only offer receipts. Those receipts are themselves mail messages; delete one, and you won't be able to refer back to it. QuickMail's Mail Log status report contains more detailed information than a receipt—and you can tell QuickMail how long to track a message and its status. If you don't want a Mail Log (QuickMail has a receipt feature too), you can always turn

the option off. QuickMail also lets you create your own folders to store mail you've already read.

Overall, QuickMail is the most flexible E-mail system for file enclosures. If you're using Macs for E-mail only, QuickMail and InBox are about equal in file-enclosure capability. Both allow you to enclose more than one file per mail message. I think it's archaic that Microsoft Mail supports only one.

If, on the other hand, you have both PCs and Macs on your E-mail network, QuickMail comes out ahead of both InBox and Microsoft Mail. QuickMail is the only system that filters file names and adds DOS extensions to a file when you're exchanging files between Macs and PCs.

When it comes to forms, I think QuickMail is more flexible than Microsoft Mail. Because Microsoft Mail's forms design program is based on HyperCard, Microsoft Mail forms are limited in size to HyperCard cards. QuickMail's QM Forms application puts no limitations on a form's size. InBox has no forms-design capability to speak of.

For remote access to E-mail, QuickMail is the winner again. It's the only package that lets you dial directly with a modem into a mail server. I find that capability particularly useful when I'm on the road. If I have a Mac with me, I use QM Remote to retrieve and answer mail; if I'm carrying around a laptop, I use a terminal emulator.

On the managerial side of things, InBox is the most flexible to set up; you can use a variety of computers as the mail server. Microsoft Mail and QuickMail both require a Macintosh. I occasionally find myself constrained by QuickMail's QM Administrator application, primarily because it must run in the foreground to send and receive mail by modem. Therefore, you are not able to use it and the AppleShare Print Server software on the same server simultaneously.

Some administrators may believe that Microsoft's globally updated address list is the best way to go and that QuickMail's NameServer still demands too much user interaction to ensure current address lists. That may be true for networks that are continually changing; however, I consider that situation to be rare. Networks have a tendency to settle down and require only minimal changes in address lists.

When it comes to administrative tools, InBox falls far short of Microsoft Mail and QuickMail, both of which offer extensive report-generation capabilities. I think Microsoft Mail may have a slight administrative edge over QuickMail here, because you can administrate any server from any Mac on the network.

QuickMail currently has the largest number of working E-mail gateways. If you want to link a Macintosh E-mail system to other mail systems, Quick-Mail has the edge.

It probably comes as no surprise that I consider QuickMail the best E-mail system. It offers the most features, including many that aren't available in InBox and Microsoft Mail. Most important, QuickMail is flexible enough that if you decide you don't want to use a feature, you can usually turn it off. Because of QuickMail's many features, it takes a little longer to learn than the others. Once you've learned it, though, you have a powerful package at your fingertips.

See Where to Buy for contact information.

Dave Kosiur is a Macworld contributing editor, and the editor of a Macintosh networking newsletter, Connections. If he keeps using E-mail so much, he'll forget what his mail carrier looks like.

PHOTOGRAPHS BY PIERRE-YVES GOAVED

hen Apple introduced the 300-dots-per-inch LaserWriter, we all wanted one. We were tired of the ImageWriter's jaggies, and PostScript output looked so precise and professional. Not all of us were able to rationalize the LaserWriter's \$6000 price tag, however. Especially if our printing needs were limited to business correspondence and simple page layout.

Apple may have been the only game in town back then, but today a variety of hardware and software options await the low end user. Several major manufacturers now produce either high-resolution dot

# PRINTING WITHOUT POSTSCRIPT

matrix or ink-jet printers that make the most of Apple's QuickDraw routines, and they do it at prices that make sense—in many cases, less than \$1000.

You won't get PostScript at these prices, but all of the printers mentioned in this article ship with their own precision bitmapped or outline fonts. Bitmapped fonts are designed to take advantage of specific printer resolutions (300 dpi, for instance) and many are quite nice looking, but you must install each point size in the System file. Larger point sizes take up a great deal of memory and so you have always been limited in the number of bitmapped fonts you could store in the System at any one time.

Outline fonts, on the other hand, can be mathematically scaled, so they take up much less memory and they retain their smooth, optimized curves even when blown up to larger sizes. Three-hundred-dpi outline fonts used to be the exclusive domain of Apple's Laser-Writer IINT, but now software utilities such as Adobe Type Manager (ATM) bring outline fonts to even the humblest non-PostScript devices, completely changing the rules of the game. In addition, Apple has recently announced that it will be including its own outline font manager, dubbed Royal, in System 7.0. (See Erfert Fenton's feature, "Battle Royal," in *Macworld*, April 1990, for an unraveling of many font mysteries.)

In this article I'll look at four kinds of printer-software combinations, each a step above the last in print resolution and in price. The first is the humble and familiar ImageWriter II. Because many readers rely on this printer, I'll use it as an example to show what ATM (and eventually System 7.0) can do for print quality. The second, still AFFORDABLE
PRINTERS
COME OF AGE

By Charles Seiter



conservative, category includes letterquality (typically 24-pin) dot matrix printers. Two of these, the Apple ImageWriter LQ and the Epson LQ-950, use standard QuickDraw technology, while the GCC WriteImpact and the (P321SLC) Toshiba Three-In-One come with their own sets of outline fonts. The third printer category includes the ink-jet printers, represented here by Hewlett-Packard's DeskWriter, the Tektronix ColorQuick, and Kodak's Diconix M150 Plus. Finally, in the fourth category, I'll look at the high end of the range, the Apple LaserWriter IISC and the Personal LaserPrinter II from GCC Technologies.

### ImageWriter II Meets ATM

For years, programmers have attempted to wring letter-quality type out of the ubiquitous ImageWriter. Special fonts that closely optimize ImageWriter printing at 10- and 12point sizes (Boston and Beverly Hills are good examples) are capable of producing near-letter-quality text, but you don't always want to restrict your printing to these fonts. The problem is, of course, that the 9-pin print head of the ImageWriter II gives you 144dpi print resolution, and type designers must exercise a considerable measure of ingenuity if they are going to avoid jagged lines along curves and slanted segments.

In the past there was no way around this except to stock your System with all the bulky bitmapped fonts for larger sizes, but in late 1989 Adobe Systems came to the rescue of non-PostScript printer users with Adobe Type Manager. This program supplies outline fonts for Times, Helvetica, Courier, and Symbol, and it works with Adobe's Type 1 PostScript fonts as well. (Owners of ImageWriters are unlikely to have purchased many Type 1 fonts, however.) Check out the initial capital S in "A Print Sampler" for an example of impressively clean printing from this faithful old device when used with ATM.

Images print more smoothly than they appear on a 72-dpi monitor—the ATM improvement is easy to see—but it is still clear that when making curves from dots it helps greatly if the dots are little (see "ATM Limits"). Nonetheless, using a few old familiar tricks or years,
programmers have
attempted to wring
letter-quality
type out of
the ubiquitous
ImageWriter

(print larger pages in 14- or 18-point text and reduce by 10 to 20 percent in a photocopier, for example), it is possible to turn out semiprofessional output on an ImageWriter II with ATM.

### The Promise of System 7.0

This combination also gives you a preview of wonders yet to come in Apple's System 7.0. With the outline font technology promised for 7.0, many of the distinctions between QuickDraw and PostScript printers are supposed to melt away. The new System (which will require a minimum of 2 megabytes of RAM) will use outline fonts for both screen display and printing. Text displayed on the screen will be much less jaggy and printers will produce the best output that their dot densities allow.

Much of what the new font scheme from Apple will accomplish is already in place with ATM. If you want to enter the wonderful world of outline fonts right now, with your existing QuickDraw printer, you should consider investing in ATM—you can at least count on what it promises. And you can get a package of 22 high-quality fonts from Adobe (this package, of course, works with ATM) for \$99 or less.

Another package for use with ATM, TypeAlign, also priced at \$99.95, is available from Adobe Systems. TypeAlign enables you to produce near-PostScript special effects: text stretching, rotating, curving, and free-hand kerning. For newsletter headlines or production of custom letterhead it's the next best thing to PostScript at a fraction of the price (see "TypeAlign Effects.")

### **Dots What It Takes**

Since the ImageWriter II's fundamental problem is insufficient dot density, the obvious brute-force engineering approach to correcting this deficiency is to add more dots per inch in the print head. Apple realized this years ago and commissioned the Image-Writer LQ, a printer with a unique 27-pin print head and 216 dpi resolution in its slowest, highest-resolution print mode. Since the ImageWriter LQ is a QuickDraw printer relying on bitmapped fonts, it's fair to describe the LQ as a wide-carriage ImageWriter that prints at two to three times the ImageWriter's resolution. For several years, the LQ was the only printer of its kind available on the Macintosh market, but its reputation was marred by complaints of frequent mechanical problems.

Now the LQ faces three formidable competitors. The 24-pin Epson LQ series—here represented by the 180-by-360-dpi model 950—uses four printer-resident fonts (Compressed, Pica, Elite, and Proportional) for highest-speed letter-quality printing and four precision bitmapped fonts (the inevitable Times, Helvetica, Courier, and Symbol) for more Mac-like effects. The Toshiba Three-In-One, a 24-pin printer that offers resolution up to 360 dpi in high-resolution-graphics mode, includes four outline fonts, the names of which you might easily guess at this



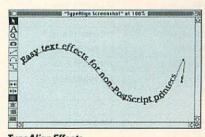
### ATM Limits

One much-hoped-for effect of ATM is absent: laserlike printing at 10- and 12-point sizes. The problem is that 12 points is ½ inch; this gives the program and printer ½ of 144 vertical dots (that's a mere 24) to work with from the top of a capital letter to the bottom of the downstroke on a lowercase p. That works out to 4 or 5 dots to use in rounding the bend at the bottom of a lowercase g, and even an optimized outline font can't hide the fact that you're trying to make a smooth curve from 5 bricks. The problem is obviously worse at 10 points and less severe at 14 (sometimes 1 or 2 extra dots in a letter make a big difference in smoothness).

point (the same standard four). As with most printers that started life in the IBM PC world, the Toshiba Three-In-One has higher-speed Courier, Elite. and Draft resident fonts. It also handles bitmapped fonts reliably as long as you have installed the exact font and point size you want to use. Finally, GCC Technologies has released its 24-pin printer, the WriteImpact, at 180 by 360 dpi. WriteImpact's selling point is the set of 22 outline fonts that come with the printer, a set that can be expanded with a 38-font additional package from GCC.

### **Pin Comparison**

As you can see in "A Print Sampler," all competent 24-pin (or, in the case of the Apple ImageWriter LQ, 27-pin) printers can in principle produce similar results. The exact appearance of type, particularly in very large and very small point sizes, is determined more by ribbon condition than by the brand name of the printer. A new ribbon, for example, can print clogged and darklooking 10-point text, and very old ribbons aren't up to the task of printing blacks adequately for text that is 24point or larger. The samples also show that using custom outline fonts, where provided, is the equivalent of using ATM. For example, the Toshiba Three-In-One gives smooth output since it employs GDT Softworks' outline font implementation, and the GCC Write-Impact uses Bitstream outlines. Used alone, the Epson LQ-950 output is not quite as good as previous printers, and the ImageWriter LQ comes in last, but ATM puts both of these back in the competition.



TypeAlign Effects One of the great advantages of PostScript

printing is that it lets you apply effects to type. With Adobe Systems' TypeAlign, QuickDraw printers have access to many of the same special effects-rotation, skewing, perspective, and distortion.

The printers in this category are rugged, good at low-cost day-to-day output, and convenient for printing labels and envelopes. If you run these letter-quality dot matrix printers at optimal resolution with outline font software, they're a practical choice in situations where low speed (relative to laser printers) and high noise levels aren't objectionable.

### Think Ink

Another approach to high-resolution printing is the ink-jet printer. Because it uses nonimpact technology, the advantages of this type of printer include compactness and quiet operation. Within the last few years, several companies have refined ink-jet technology, and although it's nec-

essary for you to be more careful in selecting paper and in handling the sometimes-stillwet output, these printers have some advantages in light-duty printing situations.

The best known ink-jet printer is the Hewlett-Packard DeskWriter, a 300-dpi printer with a loyal following and impeccable ergonomics. The DeskWriter depends on precision bitmaps-four standard fonts come with the printer (more are available from Hewlett-Packard)-but Adobe Type Manager specifically mentions the DeskWriter as a supported device for its outline font manipulation. This is a significant development, since at 300 dpi, outline fonts excel not just in the larger sizes (as we saw with the 144-dpi ImageWriter) but all the way

down to 6 points or so. Two other ink-jet printers, included more as examples of the craft than as direct competitors of the DeskWriter, are the Tektronix ColorQuick and the Kodak Diconix M150 Plus. Both of these are really special-purpose devices, but they give us an opportunity to see the effect of dots-per-inch in ink-jet practice. The Tektronix is optimized for color printing, but it does a creditable job of 216-dpi blackand-white printing. Since it costs as much as a low-end laser printer,



The Toshiba Three-In-One is a 24-pin printer that offers up to 360 dpi.



GCC Technologies' WriteImpact is packaged with 22 outline fonts; an additional 38-font set is also available.



if your printing activities include significant amounts of color work.

The Kodak Diconix (available in a previous incarnation as the GCC Write-Move) is a 192-dpi printer that comes with Adobe Type Manager as part of the package. The key feature of the Diconix, however, is its size—it's very slightly larger and heavier than the manual Apple provides with the ImageWriter LQ. This means you can put the Diconix in a briefcase and operate it from rechargeable batteries if you like.

### **Comparing Ink-Jet Printers**

Comparing the print quality of the inkjet printers is difficult, because the three printers really target different specialties. Only the DeskWriter represents a best-effort, no-compromise attempt at laserlike black text quality. Nonetheless, the Tektronix has undeniable appeal for those in need of color capabilities, and the Kodak printer boasts portability.

It's just shocking to see the tiny Diconix rapidly roll out text of decent letter quality. It's equally shocking to see the resolution obtainable with a combination of font and point size that optimally exploits the DeskWriter's set of precision bitmaps—results are not invariably this good, but for the fonts and sizes used in standard business

one of the
early non-PostScript
printers could take
advantage of
outline fonts

correspondence the DeskWriter is outstanding (see "A Print Sampler"). Tektronix's ColorQuick is nearly in this same league, but at its price it is competitive only against other color printers.

### **Previewing PostScript Output**

Because serious typography takes place in the wild blue yonder past 300 dpi—beyond most of our budgets—those in need of professional typeset quality should use a PostScript-based imagesetter of the kind found at service bureaus. The problem is that if you send pages directly to a service bureau, you can't be sure of what the output will actually look like. So, how do you avoid the expense and extra work entailed in fixing unanticipated glitches before sending a file to the imagesetter? How do you preview PostScript-device output?

One solution involves combining the Hewlett-Packard DeskWriter with the software package Freedom of Press (\$495 suggested retail list) from Custom Applications. Freedom of Press lets you output PostScript files to non-PostScript devices; in effect, you operate a printer as if it were PostScript-based. This means that you can set up pages in any PostScript-oriented software and print them on the Desk-Writer at less-than-typeset resolution but with correct spacing and layout.

### Almost PostScript

For several years, the standard for high-resolution printing in the Macintosh realm has been the PostScript printer, specifically Apple's LaserWriter IINT and IINTX. None of the early non-PostScript printers could take advantage of outline fonts, and their output suffered. To match PostScript performance, some printers included a Post-Script interpreter, which speeded up performance; but the interpreter amounted to another 68xxx-based computer complete with several megabytes of RAM buried somewhere inside the printer, and you had to pay premium prices.

That was then, this is now. With the advent of Adobe Type Manager and PostScript-clone interpreters, you can now get smooth fonts at 300 dpi

Printer	Vendor	List price	Street price	Fonts	Maximum dpi density	Speed (in characters per second)
9-pin			HARRIS S	SULCIDE SA		
ImageWriter II	Apple Computer	\$599	\$450	Apple System	144	250 draft/45 hi-res
24- or 27-pin						
ImageWriter LQ	Apple Computer	\$1399	\$750	Apple System	216 x 216	250 draft/118 hi-res 1
Toshiba Three-In-One	Toshiba	\$949	\$670	4 outline, 3 printer resident	360 x 360	220 draft/90 hi-res <sup>2</sup>
WriteImpact	GCC Technologies	\$699	\$550	22 outline <sup>3</sup>	180 x 360	210 draft/90 hi-res <sup>2</sup>
Epson LO-950	Epson	\$799	\$540	4 high-resolution bitmap, 3 printer resident	180 x 360	220 draft/80 hi-res 1
Ink-jet						E. S. Service
DeskWriter	Hewlett-Packard	\$1195	\$845	4 high-resolution bitmap, additional packages available	300	120 draft/40 hi-res
Diconix M150 Plus	Kodak	\$699	\$525	draft, 4 ATM fonts	192	99 draft/24hi-res
ColorQuick	Tektronix	S2495	\$1950	11 high-resolution bitmap	216	30 draft/20hi-res
High-end QuickDraw						
LaserWriter IISC	Apple Computer	\$2799	\$2095	Apple System	300	4 pages/min
Personal LaserPrinter II	GCC Technologies	\$1399	\$1140	22 autline 3	300	4 pages/min

As quoted by vendor

<sup>&</sup>lt;sup>2</sup> As tested by Macworld.

<sup>3</sup> Can be expanded with 38 additional fonts

### BEYOND THE ORCHARD

n the land where Apples are rare, Hewlett-Packard's LaserJet series dominates laser-printing applications. HP's low-end laser printers-notably the recently announced LaserJet III-cost \$1000 less than Apple's low-end LaserWriter IISC. As an alternative to the IISC or to GCC's PLP II, you might want to consider a LaserJet operated with one of the many Mac-compatible interfaces currently available.

A LaserJet operated with Insight Development Corporation's MacPrint (\$149), for example, offers 300-dpi resolution as a printer option at the Chooser level; using MacPrint is as simple as installing a standard Mac-only printer. The program includes precision bitmapped fonts in sizes from 9-point to 96-point for the usual Big Four-Times, Courier, Helvetica (in a variant called Triumvirate), and Symbol. Despite what would seem to be formidable format-translation obstacles, MacPrint allows you to use the variety of font cartridges developed by HP and third parties for use in the LaserJet.

Another product, JetLink Express (\$149) from GDT Softworks gives you a set of thirteen 300-dpi outline fonts and simple Mac installation; an additional package with 35 more fonts is also available. If you want laser-printer output at the absolute lowest cost, you can contrive to get it by careful shopping for a LaserJet and comparison of catalog prices for these Mac-to-HP drivers.

Printer Interface III from DataPak Software (\$125) can use all the Macintosh fonts, HP's built-in fonts and font cartridges, and it includes a standard interface cable.



Kodak's Diconix M150 Plus is a 192-dpi printer that is barely bigger than a bread box.

with less-expensive hardware. For instance, Apple's venerable LaserWriter IISC, a low-cost QuickDraw-based alternative to the IINT series, can now be enhanced with the outline fonts available in ATM, and it should soon benefit from the font-handling changes in System 7.0. Another example, GCC Technologies' Personal LaserPrinter II (PLP II) is shipped with the same set of 22 outline fonts as the WriteImpact dot matrix printer and can be supplemented by 38 more, each offering the unmistakable advantages of outline fonts.

As you can see in "Printer Specs," even at 300 dpi, there are differences between properly smoothed fonts and relatively coarse bitmaps-note the difference between LaserWriter IISC output with and without ATM. Even with the improvement that ATM brings to the IISC, the expanded font set gives the PLP II greater flexibility than the IISC, and at a lower price; and the PLP II's output quality is equal to or better than the IISC's at any combination of font and size. When using outline fonts, both of these printers can compete with fancier, more expensive models for output quality, if not for

speed. The PLP II is slower because it makes the Mac itself perform the outline computations. Networking capabilities are also somewhat limited, although both can be upgraded to Apple's and GCC's business-class laser printers.

### **Time to Choose**

As recently as two years ago there were few acceptable alternatives to Apple's own printers. Those who attempted to install non-Apple printers typically found the process to be a nuisance, and the printers themselves were liable to exhibit unpredictable quirks. Now a dozen major printer manufacturers have entered the Macintosh market with printers that are not only good enough for business correspondence but for informal desktop publishing as well. They are no more trouble to install or operate than Apple's own offerings. These printers not only have the intrinsic hardware resolution to produce near-PostScript results from plain old QuickDraw units, but the recent in-



Apple's LaserWriter IISC can now be enhanced with the outline fonts available in Adobe Type Manager.

### A PRINT SAMPLER

Apple ImageWriter LQ

See 24-point Times courier Helvetica

Apple ImageWriter LQ (with ATM)

See 24-point Times courier Helvetica

Apple ImageWriter II

See 24-point Times courier Helvetica

Apple ImageWriter II (with ATM)

See 24-point Times courier Helvetica

Apple LaserWriter IISC

See 24-point Times Courier Helvetica

Apple LaserWriter HSC (with ATM)

See 24-point Times courier Helvetica

Epson LQ-950

See 24-point Times courier Helvetica

GCC Personal LaserPrinter II

See 24-point Times courier Helvetica

GCC Writelmoact

See 24-point Times courier Helvetica

Hewlett-Packard DeskWriter

See 24-point Times Courier Helvetica

Kodak Diconix M150 Plus

See 24-point Times Courier Helvetica

Taktroniy ColorQuick

See 24-point Times Courier Helvetica

Tochiba Thron In One

See 24-point Times Courier Helvetica

Toshiba Three-In-One (with ATM)

See 24-point Times Courier Helvetica

Sample output from each printer has been enlarged by 127 percent.

troduction of ATM, and the imminent release of System 7.0, erases most of the class distinctions between these two types of output devices. And as a pleasant surprise, you can expect ongoing software developments in the coming year to enhance the output capabilities of any printer you buy.

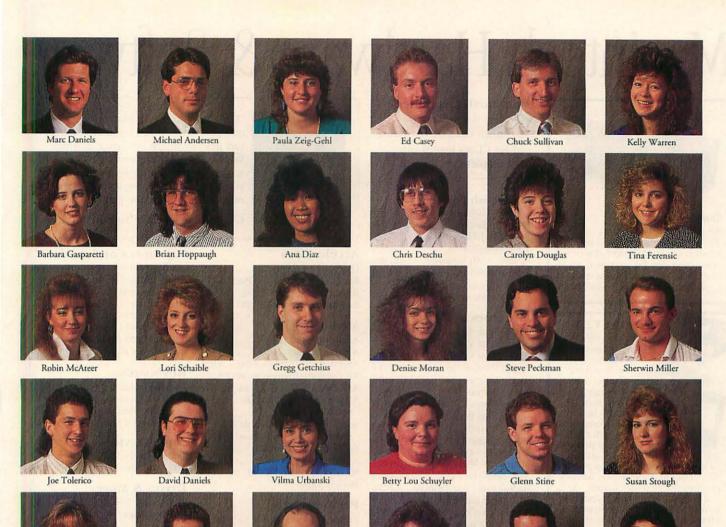
If you don't have a printer now, the market sorts itself out pretty simply. First, there's not much reason to buy an ImageWriter II anymore—there are 24-pin printers for nearly the same price. Among 24-pin printers, you may as well pick the cheapest one you can buy locally; Adobe Type Manager has erased most of the differences that vendors' software packages used to create, but you are still likely to want to line up service you can reach conveniently. If your printing requirements are restricted to a few pages per day, the Hewlett-Packard Desk-Writer (or for portability, the Kodak Diconix M150 Plus) is a quiet alternative to a 24-pin printer.

Finally, if you have a \$1000 printer budget, scrounge up a few hundred more and get a GCC PLP II. The print quality compares favorably to that of printers costing thousands more, it's fast enough, and installation has been improved over the first PLP. In mid-1990, it's the outstanding bargain in OuickDraw printers.

As this article went to press, Hewlett-Packard announced an Adobe PostScript cartridge and an AppleTalk interface kit for the LaserJet models IID, IIP, and III. Since the IIP has a list price of \$1495 and the AppleTalk kit and PostScript cartridge are priced at \$275 and \$695, respectively, this is a price breakthrough for a true Post-Script printer, especially since Laser-Jets are often heavily discounted. When LaserJets are loaded to the recommended memory level, another \$1000 or so must be added to this, but they are still important bargains for true Adobe PostScript.

See Where to Buy for contact information.

Charles Seiter has been experimenting with non-Apple printers for Macworld for four years. His background includes development of custom drivers for highresolution scientific plotting.



# 30 Good Reasons to Purchase from CDA Computer Sales

We can give you lots of good reasons to purchase your Macintosh, peripherals and software from CDA. But we feel the personal service and attention you receive is the best reason of all. *Your satisfaction is the bottom line*.

Sharon Daniels

From our knowledgeable sales staff and customer service representatives, to our technical support team and warehouse crew, every order receives personal care from start to finish.

Of course, top notch quality service doesn't come easily. Ten years of experience in computer mail order has helped us to achieve this high standard of service. Since 1980 CDA has been serving

customers worldwide.
Growing along with the personal computer industry has enabled us to provide the knowledge and experience necessary to help you get what you need, when you need it, at the right price—with full support and service.

It's our people that make the difference.

.....These are The People of CDA

## Macintosh Hardware & Software



### DataLink Mac

by Applied Engineering The DataLink Mac internal 2400 baud

modem for the Macintosh II series of computers can be upgraded to include MNP levels 4 & 5 and send-fax capability. Software included \$269

GOfer V2.0

by MicroLytics is a powerful software utility for searching, finding & retrieving text and now it's 50% faster. It is compatible with the best

selling word processing and DTP programs & utilities. GOfer retrieves text from a public file on popular file servers without needing file or folder names. And, you can quickly access scanned information from OCR applications. The best value among text-retrieval software packages, ..... \$45



### WhiteKnight

by Freesoft is Scott Watson's successor to the legendary Red Ryder telecommunications program. But it's more than just a new version! The

new features list alone is over 20 pages long. WhiteKnight comes bundled with Okyto, a revolutionary Mac-to-Mac file transfer program and a free subscription to the GEnie Network.....\$89

### **Deluxe Carry Case**

by Targus Take your Mac Plus or SE with you in this deluxe carry case made of durable nylon that is "Zilicone" treated, water-proof, and

scuff resistant. There's plenty of room for your Mac, a hard drive and extended keyboard, plus com-

partments for your mouse, cables, pens diskettes, and accessories.

Blue, black or gray. \$69

### **Macintosh Computers**

We carry the full line of Macintosh computers. Please call for CDA's lowest price! For complete ready-to-run systems - turn the page!

### **Macintosh Portable**

1 Mb w/40Mb Hard Drive .. \$4995 Numeric Keypad .....\$59 2400 Baud Modem ......\$379 1 Mb Upgrade ......\$539 Siclone 2 Mb Upgrade ...... \$1399 Siclone 4 Mb Upgrade ...... \$2699 Targus Leather Atache Case for the Macintosh Portable ...... \$159

### Monitors & Video Cards

Apple High Resolution RGB, \$799 Apple 4 bit Video Card ...... \$399 Apple 8 bit Video Card ...... \$519 Apple Display Card 8.24 ...... \$719 Apple Display Card 8.24GS \$1619 Apple Portrait Display .......\$829 Apple Portrait Video Card .... \$479 Apple Two Page Display .... \$1599 Apple Two Page Video Card \$479 Cutting Edge Two Page 19" .. \$899 E-Machines Color Page 15.. \$1649 Magnavox Mac Color 14" ..... \$489 NEC MacSync 14" ..... \$499 Radius Full Page Display ..... \$719 Full Page Interface Card ..... \$479 Radius Two Page Display ... \$1099 Two Page Interface Card ..... \$485 Radius Pivot Display ......\$819 Pivot Interface Card ...... \$596 Radius Pivot GS Upgrade .....\$123 SuperMac Trinitron 19" ...... \$3250 Spectrum 8 Series II ...... \$1449

### Upgrade Your Mac!

All upgrades come complete with easy to follow instructions. Fast 80ns Simm Modules

RasterOps Colorboard 264 .... \$649

2 Mb for Mac Plus/SE ...... \$178 4 Mb for Mac SE/30, Mac II, IIci, IIcx, and IIx .....\$356 4 Mb for Mac IIfx ......\$585 Video Memory — Upgrade your 4 bit Apple Video Card to 8 bits and get up to 256,000 colors on

display ...... Reduced Price \$89

### Speed up Your Mac!

Increase the speed of your Mac II, IIx or IIcx. All DayStar 68030 PowerCard Accelerators now include a 68882 math processor.

25 Mhz PowerCard 030 .... \$1099 33 Mhz PowerCard 030 .... \$1469 40 Mhz PowerCard 030 .... \$1849 50 Mhz PowerCard 030 .... \$2549



"Whether you're a newcomer to computers, or an old hand at it, things can get downright confusing at times. When you purchase from CDA you won't be left hanging — we're here for you. We'll get you the answers you need to help solve the problem."

Chuck Sullivan, Tech Support Manager

### Accelerators

DayStar Fast Cache IIci ...... \$735 Radius Accelerator 16 (Plus) \$639 Radius Accelerator 16 (SE) ... \$639 Radius Accelerator 25 (SE) ... 1099

### Modems

Abaton Interfax 12/48 ...... \$265 Abaton Interfax 24/96 ......\$399 AE DataLink Express 2400 .... \$189 AE DataLink Express w/MNP\$249 AE DataLink Mac .....see feature AE DataLink MacPortable ..... \$259 Send-Fax Option ......\$62 Supra 2400 Baud w/cable & communications software .. \$139 Prometheus 2400 Baud Internal for Mac II .....\$275 Shiva NetModem V2400 ...... \$439 

ImageWriter II w/cable ...... \$459 Olympia NP-30 w/cable ...... \$289 LaserWriter IINT w/cable .... \$3495 LaserWriter IINTX w/cable .. \$4695 HP DeskWriter w/cable ...... \$879 HP LaserJet IIp w/Grapler LX interface card ......\$1349 Kodak Diconix M150 Plus complete with cable, driver & Adobe Type Manager ...... \$529 QMS PS-810 w/cable ..... CALL QMS ColorScript 100 ...... CALL Ricoh Laser 6000/PS ..... \$2495 Sharp JX-730 .....\$1999

### **Printer Accessories**

The Organizer Cart by CoStar will position your Laser printer at desktop height and has four shelves for storing extra paper paper trays, and toner cartridges. Organizer Cart ......\$184 LabelWriter by CoStar ...... \$189 LabelWriter Labels (2 rolls) .... \$11 Apple LaserWriter II Toner ... \$109 GCC Toner (PLP II) ......\$29

### Scanners

Microtek MS II .....\$1099 Microtek MSF300GS ..... \$1599

### Scanners Continued...

Abaton Scan 300/GS ......\$1479 Apple Flatbed Scanner ...... \$1349 Logitech ScanMan ......\$319 Sharp JX-300 ..... \$3339 ThunderScan ......\$169 ComputerEyes Color ......\$349 Olduvai Read It Software ..... \$245 Caere Omni Page Software . \$569

### **Keyboards**

DataDesk Mac 101 Plus ...... \$135 DataDesk Switchboard ...... \$175 Keytronic MacPro 105 w/Tempo II Software ...... \$135

### Input Devices

Turbo Mouse ADB ......\$109 The UnMouse ......\$189

### **Drives & More**

SystemGate 800K external .... \$149 **Cutting Edge** 800K external ......\$159 Under the Mac 20 .....\$359 Under the Mac 30+ .....\$435 Under the Mac 45+ ..... \$495 Under the Mac 60+ .....\$595 Under the Mac 80+ .....\$659 Cutting Edge Drives w/Quantum Mechanisms (see feature) SyOuest Removable 45 ...... \$819 **Dayna Communications** 

### DaynaFile Single 360K ...... \$499

DaynaFile Dual 360K/1.2 ... \$719 IDS Pro small footprint hard disk drives come complete w/7 Mbs of shareware.

Pro 20Mb External (27ms) .. \$399 Pro 30Mb External (35ms) .\$469 Pro 40Mb External (19ms) . \$559 Microtech 60 Mb Tape ...... \$739 Microtech 150 Mb Tape ...... \$989 CD Technology CD PortaDrive ......\$665 CD Drive complete w/ Microsoft

Office Bundle ......\$1099

### Apple CD Rom Drive ......\$735

Networking Nuvotech NuvoLink SC ...... \$319 NuvoLink II ......\$279 Turbo Net ST ......\$3

CDA Offers 2 Day Express Delivery Absolutely Free\*

## CDA Now Offers Free Freigh

**Utilities Continued....** 

Norton Utilities for Mac ...... \$73

SuperCard ......\$125

SuperSpool V5.0 .....see feature

SuperLaser Spool ...... see feature

SAM ...... \$69

SUM II ......\$94

Spreadsheets/Databases

4th Dimension 2.0 ...... \$469

Filemaker II 1.1 ......\$239

MacPlus/SE XKB Carry Case .. \$69

Mac IIci/IIcx Carry Case ....... \$85

Peter Norton

Silicon Beach

SuperMac

Symantic

Networking Continued Turbo Net ST12 Pack\$279
Farallon
Timbuktu 3.0 \$95
Timbuktu 3.0
Timbuktu/Remote\$125
Timbuktu/Remote Access \$849
Traffic Watch\$125
PhoneNET Plus (Din-8)\$32
Farallon Portable Pack \$329
Microsoft
Microsoft Mail Workstation \$84
Microsoft Mail Server\$249
Accounting & Home
Finance Software
Bedford (Computer Assoc.)
Simply Accounting\$229
Intuit
Quicken 1.5\$39
Layered
At Once! V1.0\$285
MECA
Managing Your Money\$124
Nolo Press
For the Record\$29
Will Maker \$32
Communications
Software Ventures
MicroPhone IIsee feature
The Freesoft Company
White Knightsee feature
winte Kingitsee jeuture
Desktop Publishing
Adobe
Type Manager\$56
Type Align \$65
Adobe Streamline V1.0 \$229
Adobe FontsCALL
Aldus
PageMaker V3.0\$375
Freehand V2.02\$329
Preenand V2.02
Persuasion V2.0\$329
Broderbund
Type Styler\$119
Print Shop\$38
LetraSet
Design Studio\$609
ImageStudio\$275
Till and a second

Drawing/Graphics/Ca	AD
LANDC	
Micro TV	\$265
Micro TV Professional	\$399
Adobe	
Illustrator 88 1.93	\$279
Photo Shop	
Ashlar Vellum	\$745
Claris	
MacPaint 2.0	.\$95
MacDraw II	\$319
Delta Daint	
Delta Graph	\$118
Deneba	
Canvas V2.1	\$179
Ultra Paint	
71	
Studio 8	\$319
MacroMind	*5.7
Director 1.0	\$445
VideoWorks II	\$180
Paracomp	4107
Paracomp Swivel 3D	\$310
Silicon Beach	031)
SuperPaint 2.0	\$120
Silicon Press	\$55
A SALAR STATE OF THE SALAR STATE	
PixelPaint 2.0	\$225
PixelPaint Professional 1.0	\$380
Zedcor	050)
DeskPaint & DeskDraw 3.0	\$115
Programming/Utilitie	S
Abbott Systems	
Can Opener	. \$67
Apple System 7.0	CALL
Connectix	
Virtual	\$199
Custom Applications	
Freedom of the Press	\$259
Dataviz	
MacLink Plus/PC	\$129
<b>Dubl-Click Software</b>	
Calculator Construction Set	.\$45
Fifth Generation	
Pyro	.S22
Fast Back II	107
Disk Lock 1.0	107
Suitcase II	
Microrim/HIC	
Virex	. \$54
	CO BAN

etronic Aete	Microsoft
ectronic Arts dio 8\$319	Excel 2.2\$249
croMind	Informix
ector 1.0\$445	Wingz\$259
eoWorks II\$189	
	Word Processing
racomp ivel 3D\$319	Microsoft Word V4.0\$245
icon Beach	Word V4.0\$245
perPaint 2.0	Write 1.0\$79
con Press\$55	Caere
THE RESERVE OF THE PARTY OF THE	Omni Page V2.1\$569
perMac elPaint 2.0\$225	Sensible
elPaint Professional 1.0\$389	Sensible Grammer\$52
lcor	T-Maker Write Now\$119
	Write Now\$119
skPaint & DeskDraw 3.0\$115	Word Perfect
ogramming/Utilities	Word Perfect Word Perfect 1.03\$229
bott Systems	
Opener\$67	Music for your Mac
ple System 7.0CALL	Passport Designs
nnectix	Master Tracks Pro V 3.02 \$209
rual\$199	Master Tracks Pro 4
stom Applications	Master Tracks Jr\$82
edom of the Press\$259	Encore
taviz	Serial Midi Interface\$79
CLink Plus/PC\$129	MIDI Transport\$299
bl-Click Software	Coda Finale V 2.0 \$549
culator Construction Set \$45	Mac Drums\$38
th Generation	Perceive\$59
o\$22	Mark of the Unicorn
t Back II\$107	Professional Composer 2.3 \$369
k Lock 1.0\$107	Performer V3.3\$399
case II	MIDI Time Piece\$365
crorim/HJC	Altech Systems
ex	1 x 3 Midi Interface \$79
X3)4	<b>Opcode</b> Vision\$369
	Studio Plus II\$169
c enthusiast. My wife and	Studio III\$349
sing our Macs for desktop	Farallon MacRecorder 2.0 \$169
aphics, music, business	Carry Cases
for over five years now.	I/O Designs Ultimate Carry Case
a long time, satisfied	Mac Plus Carry Case
DA, and now as an	Mac SE Carry Case
	Targus Carry Cases
n pass on my experience	MacPlus/SE Carry Case\$55
o help others."	Macrius/SE Carry Case \$55



MicroPhone II is the top selling program for telecommunications, data exchange, file transfers, and online



### Design Your Own Home Architecture

by Abracadata allows you to draw floor plans, or side views in a flash with architectural scales, grids, & overlays.

Use the stud/beam repeater to calculate lumber. It is truly simple to use, yet powerful enough for a professional. Dozens of architectural symbols are included ...... \$75

Put an End to Your Waiting



OWN HOME

Architecture

SuperLaserSpool automatically processes your documents, sends them to the printer & downloads fonts while you continue working. Now supports the HP DeskWriter.

SuperLaserSpool.....\$87 SuperSpool ......\$58

### **HP DeskWriter**

The HP DeskWriter printer puts laserquality printing right at your fingertips. Its advanced 300 dpi inkjet technology lets you print sharp text & detailed graphics. Includes scalable and outline fonts & comes complete w/cable. \$879



Publish it......\$225

**Timeworks** 

"I'm a real Mac I have been us publishing, gra and recreation I've also been customer of CI employee I car with the Mac to help others.

Tom Rie, Sales Consultant

US/Canada Call 800-526-5313 CDA Computer Sales

# All Macintosh Systems Include: Virex Software Surge Protector CPU Dust Cover Mouse Pad 10 Diskettes Disk Storage Box

### The Affordable Mac Plus/20 System

- Macintosh Plus CPU
- 1 Megabyte of RAM
- Cutting Edge 20 Mb
   External Hard Drive
- HyperCard Software
- MultiFinder Software
- Virex Software
- 10 3.5" Diskettes
- Disk Storage Box
- Mac Plus Dust Cover
- Mouse Pad
- 6 Outlet Surge Protector Package #9032V

CDA Price \$1849 Only \$52 per mo.

### The Economical Mac SE 40 System

- Macintosh SE CPU
- DataDesk 101 Keyboard
- Apple 40Mb Hard Drive
- 1.44 Mb FDHD Drive
- 2 Megabytes of RAM
- HyperCard Software
- MultiFinder Software
- · Virex Software
- 10 3.5" Diskettes
- Disk Storage Box
- Mac SE Dust Cover
- · Mouse Pad
- 6 Outlet Surge Protector Package #9041V

CDA Price \$2,699 Only \$75 per mo

## Macintosh

### Complete & Ready-to-Run

CDA offers Macintosh systems that are truly complete & ready-to-run — everything you need to get up & running. Each system listed includes all the accessories shown (at left). If you'd like us to custom design a system for your specific needs, please call one of our sales consultants.

### The Fast & Compact Mac SE 30/40 System

- Macintosh SE/30 CPU
- · Apple Keyboard
- Apple 40Mb Hard Drive
- 1.44 Mb FDHD Drive
- 2 Megabytes of RAM
- HyperCard Software
- MultiFinder Software
- · Virex Software
- 10 3.5" Diskettes
- Disk Storage Box
- Mac SE/30 Dust Cover
- · Mouse Pad
- 6 Outlet Surge Protector Package #9011V

CDA Price \$3,599 Only \$86 per mo

### ImageWriter II Printer Package

- ImageWriter II Printer
- Printer Cable
- Printer Dust Cover
- Extra Black Ribbon
- Package of Paper Package #9070

CDA Price \$475

### ImageWriter II Accessories

Apple ImageWriter II
SheetFeeder\$189
Kensington Universal
Printer Stand\$24
Targus ImageWriter II
Carry Case\$45



### CDA's 10th Anniversary Sweepstakes



1st Place - Trip for "2" to Vail, Colorado

Enjoy a full week of golfing, skiing, rafting or just the beautiful mountain air — the choice is yours. Hotel, airfare and car rental included.

2nd Place - We will be giving away "two" Macintosh Plus Computers!

3rd Place - There will be "three" \$500 CDA gift certificates awarded!

Send in the Entry Coupon or place an order with CDA & your name will be entered into the Sweepstakes!

CDA COMPUTER SALES	Entry Coupon Ad #28-06
	Name
	Address
	City
	State Zip
10th ANNIVERSARY	CDA Computer Sales 1 CDA Plaza, P.O. Box 533, Califon, NJ 07830

# Systems

### Our Guarantee

30 Day Money Back Guarantee - Your satisfaction is the bottom line. If you're not 100% satisfied with anything you've purchased from CDA — send it back! One Year Performance Guarantee - We guarantee everything we sell to be free of defects for a full year.

### The Powerful Mac IIcx System

- Macintosh IIcx CPU
- Cutting Edge 105 Mb Internal Quantum HD
- 1.44 Mb FDHD Drive
- · 4 Megabytes of RAM
- NEC MacSync 14" Color Monitor with Tilt/Swivel
- Apple 8 Bit Video Card
- DataDesk SwitchBoard Extended Keyboard
- HyperCard Software
- MultiFinder Software
- Virex Software
- 10 3.5" Diskettes
- Disk Storage Box
- Mac IIcx Dust Cover
- Mouse Pad
- 6 Outlet Surge Protector Package #9022V

### CDA Price \$5,899 Only \$140 per mo.

New! Datadesk Switchboard

The first modular keyboard

that allows you to adjust the layout to your own personal preference. You can easily move the alpha key, cursor

key and numeric key modules

trackball module and function

key module can also be added

users. .....\$175

into different positions. A

for your convenience. It is

ergonomically designed for

both right and left handed

### The Powerful Mac IIci System

- Macintosh IIci CPU w/built in Video Card
- Cutting Edge 105 Mb Internal Quantum HD
- 1.44 FDHD Mb Drive
- 4 Megabytes of RAM
- NEC MacSync 14" Color Monitor with Tilt/Swivel
- DataDesk SwitchBoard Extended Keyboard
- HyperCard Software
- MultiFinder Software
- Virex Software
- 10 3.5" Diskettes
- Disk Storage Box
- Mac IIci Dust Cover
- Mouse Pad
- 6 Outlet Surge Protector Package #9006V

CDA Price \$6,699 Only \$159 per mo.



"We do our homework when it comes to shipping. Whether you live in Kalamazoo or Zimbabwe, we'll find out the most efficient and cost effective way to get your order to you."

"When it comes to computers, we can't skimp on packing and shipping only the best quality will do."

Ed Casey, Shipping & Receiving

### The New Ultra Fast Mac IIfx System

- · Macintosh IIfx CPU
- Apple 80 Mb Internal HD
- 1.44 Mb FDHD Drive
- 4 Megabytes of RAM
- DataDesk SwitchBoard Extended Keyboard
- NEC MacSync 14" Color Monitor with Tilt/Swivel
- HyperCard Software
- MultiFinder Software
- Virex Software
- 10 3.5" Diskettes
- Disk Storage Box
- Mac IIcx Dust Cover
- Mouse Pad
- 6 Outlet Surge Protector Package #9050V

**CDA Price \$9.499** Only \$226 per mo.

annament and and an annament of the

Quantum mechanism.

Cutting Edge Hard Drives

The external series features a

19ms access time, push button SCSI address switch, & the

40 Mb External ......\$509

80 Mb External ..... \$769

105 Mb External ...... \$819

The internal series comes

preformatted complete with

cables & mounting hardware.

40 Mb Internal .....\$415

80 Mb Internal ......\$675

105 Mb Internal ..... \$735

### LaserWriter IINT Pkg.



- LaserWriter IINT Printer
- Printer Cable
- Extra Toner Cartridge
- IINT Dust Cover
- Package of Paper
- Organizer Cart by CoStar is the ideal way to organize your new LaserWriter IINT and accessories.

Package #9999C

### **CDA Price \$3,769**

We Accept - Visa, MC, AMEX, Discover, Optima, Check or Money Order. CODs up to \$1,000 accepted (add \$4 - cash, certified check, or money order only).

### \* SHIPPING

Hardware & Software under 15 lbs. will be shipped free to any destination in the continental US via 2 Day Express Delivery! Computer Systems and items over 15 lbs. please call for rates. Hawaii, Alaska, APO/ FPO & Foreign Orders call or fax for rates.

HOURS Mon-Fri 9am-10pm Saturday 9am-6pm EST Customer Service Dial Direct (800)526-5314 / (201)832-9007 (201) 832-9004

Fax # (201)832-9740 Order via CompuServe's Electronic Mall "GO CDA"

Circle 32 on reader service card

Outside US/In New Jersey

Prices & product specs in this ad are subject to change without notice. CDA is not an authorized Apple dealer. Apple is a registered trademark of Apple Computer Inc. Products names in this ad are trademarks or registered trademarks of their respective companies.

Virex by Microcom/HJC

known Macintosh viruses.

that all virus infections are

The Virex INIT will continu-

ously monitor your system so

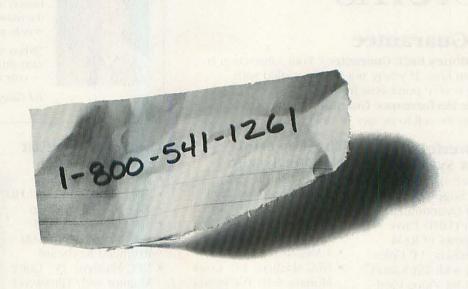
prevented. ..... \$52

presence of computer viruses

and repairs files infected by all

Virex both detects the

US/Canada Call 800-526-5313 CDA Computer Sales



# With a simple 11-digit code, you can access virtually every computer in your corporation.

No, this isn't an appeal to some bizarre group of computer hackers. Rather, it's an invitation

to dial the number shown above.

By doing so, we'll send you our comprehensive report on electronic mail technology. And you'll discover how easy it is to get people communicating across the entire corporation.

Regardless of the hardware

platform or electronic mail systems in place.

The reason, quite simply, is Microsoft<sup>®</sup> Mail version 2.0 for AppleTalk<sup>®</sup> networks has hooked up with the industry's leading connectivity vendors.

Now, thanks to Soft. Switch it's possible to link Mail 2.0 to most major email systems, including PROFS. While with Alisa Systems or Pacer Software, you can connect to VAX based systems. Even use the VAX as a Mail 2.0 server. And through Touch Communications, enterprise-wide messaging with X400 is just a gateway away.

So hook up with us. You'll find we're a solution worth tapping.

Making it all make sense

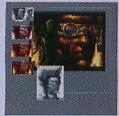
For more information, call (800) 541-1261, Dept. K77. Outside the U.S. and Canada, call (206) 882-8661. In Canada, call (416) 673-7638. © 1990 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and Making it all make sense is a trademark of Microsoft Corporation. PROFS is a registered trademark of International Business Machines Corporation. AppleTalk is a registered trademark of Apple Computer, Inc. VAX is a registered trademark of Digital Equipment Corporation.

### CALL FOR ENTRIES

### **MACWORLD Macintosh Masters III**

# Contest





DARREL ANDERSON

PATTIE BELLE HASTINGS

VERNON REED

### PRIZES, PUBLICITY, PRESTIGE

Winners in each category will receive valuable prizeshardware and software. They'll also have their work published in Macworld and in our annual graphics calendar. Last year's winners walked away with a Mac II, a Tektronix color printer, and a Truevision NuVista board; check this space next month for a list of 1990 prizes.



Macworld must receive entries by July 5, 1990.

### RULES

Please submit no more than four works; each work must be accompanied by an entry form. Include a \$5 (USA) administrative fee with your package (make check or money order payable to Macworld). Send hard and disk copies of each piece; disk copies may be omitted if the work will not fit on an 800K floppy. Animated entries may be on disk or half-inch videotape. Work will be returned only if you include postage and packaging. Macworld is not responsible for loss or damage. For more information, call

415/978-3176.

Since work will be judged on technical innovation as well as aesthetic value, each piece must be accompanied by a detailed description of how it was produced. Macworld and its international affiliates reserve the right to publish entries.





DARREL ANDERSON

### CATEGORIES

Fine Art

Illustration

Technical Illustration/ Rendering

3-D/Image Synthesis

Animation/Video

Graphic Design

None of the Above (try us)

Send artwork, entry form(s), technical notes, and a \$5 (USA) administrative fee to Macintosh Masters, Macworld, 501 Second Street, San Francisco, CA 94107, USA. Make checks payable to Macworld.

Entries must be received by July 5, 1990		
Name	registellerer der Sode belegdig	
Address	made at anima	
Phone numbers	And the state of t	

Title of work	Library Com Density
Contest category	iva mana series and
Return postage enclosed No Yes	Amoun
Submission format(s)	
Disk Hard copy VHS video	Beta video
- Control of the cont	Other
Required to view art	
Hardware	de de la composición dela composición de la composición de la composición dela composición dela composición dela composición de la composición de la composición de la composición dela composición de la composición dela
Software	

















# REVIEWS

Photo Design and Production Tool

### ADOBE PHOTOSHOP 1.0

Pros: Full-featured; has multiple channels; good for special effects; easy to use.

Cons: Expensive; manual needs more examples; no ruler guides. Company: Adobe Systems. Requires: Mac SE; 2MB RAM; System 6.0.2; hard disk. Color monitor recommended. List price: \$895.

Adobe's long-awaited Photoshop has finally arrived.
The program was designed by Thomas and John Knoll, the same people who designed the original Bar-

people who designed the original Barneyscan software, and was then acquired by Adobe, who added some real nice touches and made it more user-friendly. It's a rich program with features for the most sophisticated color professionals and a lot of practical production tools.

Adobe Photoshop is not a paint program. Even though Photoshop's paint tools rival those available in some of the best paint programs, not all of the paint tools found in popular paint programs are included. Photoshop is an image-manipulation program rivaled only by high-end systems like Scitex.

### **Tools of the Trade**

Standard features include a magnifying tool that works like Illustrator 88's (actually it's more like FreeHand's magnifying tool, because the spot where you click the tool becomes the center of the screen).

The text tool lets you enter text through a window, similar to the way Illustrator does. You can specify font, horizontal alignment, point size, leading, character spacing, style options, and antialiasing. Letter spacing can



Patricia McShane composed this image using scans of 35mm slides. She skewed and rotated the earth and pasted it into masks for each face of the tablet, controlling the shadows using paste controls. With the Threshold, Brightness/Contrast, and Distort commands and the Motion Blur filter, McShane modified Pegasus to give him movement. Using a mask, she pasted the desert behind the foreground. A transparent border was added using paste controls. Color was corrected and imperfections were removed by cloning with the rubber stamp tool.

be adjusted to ½00 pixel or ½00 point. You can kern individual letters pixel by pixel by bringing type in from an alpha channel (discussed later) and progressively deselecting and adjusting characters. Also, lots of special effects can be applied to type by using an alpha channel.

The smudge, brush, and airbrush tools all use the same set of brush

sizes and shapes, including one custom brush shape available in the Brush window. You can create a custom brush shape from any 64-by-64-pixel selection; that custom brush becomes the default custom brush for all the painting tools. Each painting tool has options for adjusting fade-out, spacing (how close each color is to another), and repeat rate (the rate at

which color is applied to the image when the mouse is stationary). All the painting tools except the line tool have an option for adjusting opacity (by percentage).

With the rubber stamp tool's unique Clone option, you click on an image on any spot you want to duplicate, click again anywhere else on the image or in another window, and you begin cloning the image—placing an exact or modified copy of the part you chose—at that point. You can also use the rubber stamp tool to save your image, make changes, and then, without saving again, have selected portions of the image revert to the last version you saved. For example, save a color image and then convert it into a gray-scale image, then wipe off the grays to reveal the color image that was last saved. You can apply effects, including patterns, to the image being restored. Super special effects.

All the paint tools work in normal mode, color-only mode, or a darkenonly or lighten-only mode on pixels that are lighter or darker than the foreground color.

The blend tool creates blends from the foreground color to the background color in a linear or radial method. The blur tool and sharpen tool decrease and increase, respectively, the contrast between adjacent pixels. The line tool lets you adjust arrow length, width, and the angle of the arrowhead.

Photoshop's selection tools allow you to select parts of an image or specific colors. You can then move the selection or even change colors. The rectangular and oval selection marquees constrain the selection to a square, an oval, a specified height-towidth ratio, or a size you define and apply with the click of the mouse. The lasso tool not only lets you select objects freehand but also lets you use the option key to select with straight lines and freehand lines interchangeably. A basic magic wand, with tolerance setting, lets you apply a userspecified amount of fuzziness to the 1-pixel edge of a selection—letting you very accurately control how softly the edge of the selection blends with the background. The Eyedropper colorselection tool lets you select foreground and background colors from the active window or an inactive window on the screen.

All the selection tools are flexible and adjustable and work with the Shift and Control keys. The Grow command (in the Select menu) progressively selects pixels surrounding a selection with increasing tolerance. The Similar command finds and selects other pixels in an image that are similar to the ones selected.

The cropping tool is great. You access it through the Cropping Tool Options dialog box to preselect the width, height, and resolution of an image (to create a constraint); Photoshop automatically sizes or resamples your image as necessary. In addition, you can rotate the selection window to crop an image at any angle. The cropping tool is a very useful production tool that can be a real timesaver when you're preparing many images for output at the same size.

### Multichannels

RBG, of course, is supported, along with CMYK, gray scale, bitmap, index color, HSL, HSB, and multichannel (any file with additional alpha channels being used for masks, and so on). Photoshop's files can have up to 16 different channels. An RGB file would initially have three channels: red, green, and blue. A channel is similar to a printing plate. For example, the RGB channels make up an RGB image. In addition, you can create up to 13 alpha channels, which are separate 8-bit channels that align with the RGB

channels. These alpha channels can be used to edit an image or to save selection masks. Photoshop also allows you to perform calculations between channels and save the results to new channels. This is great for simulating blue-screen replacement effects (see "Star Quality," *Macworld*, June 1989). The ability to perform calculations and to have multiple channels or multichannel files will appeal to anyone who needs very sophisticated control of the color in an image.

Multichannel files are possible because Photoshop uses its own virtual memory, with your file size limited only by the space on your hard disk. Of course, a file larger than RAM capacity slows things down: the program has to access the hard disk with each operation. But until we have huge amounts of RAM, virtual memory is the only way to work on large files.

Photoshop also lets you set your monitor to emulate printed process color. Once your monitor is set you will see a good representation of the changes encountered by converting from RGB to CMYK color—an essential feature for correcting an image for process printing.

Photoshop has some great filtering effects and also supports plug-in filters created by third-party software developers.

### The Joy of Photoshop

Printing with Photoshop is a joy. I do not have actual benchmark test re-(continues)



A Nice Interface

On the left, an alpha channel (created from a selection of the rose) is copied back to the RGB channels in the form of a gradating selection. The Mode menu shows available image modes, along with all the file's channels as a submenu. Using a movable color palette, you define foreground and background colors as values of RGB, CMYK, or HSB, or mix colors on the scratch pad. At the bottom a pop-up shows image size, total channels, and resolution.

sults, but Photoshop seems to print through an imagesetter faster than anything I have encountered. And it gives you lots of control over printing. The Transfer Function dialog box enables you to adjust highlights, 1/4 tones, midtones, 3/4 tones, and shadows for all the process colors individually; to adjust the monitor's gamma curve settings; and to save all the settings as a transfer function file for future use or modification. As a result you have some real calibration control over the printer's dot gain. Halftone screens are created using Adobe's special algorithms.

The icing on the cake is *trapping*, the ability to have adjacent colors overlap to compensate for misregistration in printing. Photoshop is the only program I know of that can spread the appropriate sections of an image to create trapping in the final printed piece. The extent of the trap is set in pixels, points, or millimeters. The program then looks for changes in color based on the trap size and automatically sets traps.

Photoshop is easy to use. Considering the vast number of features and tools involved, I believe Adobe has done a good job of keeping things organized and simple. However, I think that the different ways in which Photoshop handles image size and resolution can be confusing. The features and tools work great but they take a little getting used to.

The big manual takes a good three days to get through, but it's worth reading. Each feature is first described in general terms, then followed by a detailed step-by-step example on its use. The manual has good screen shots and color, but the section describing how to split and merge channels could use at least one example. Overall, there need to be more examples in the manual.

I haven't worked with Letraset's ColorStudio yet, but I don't think there's a Mac program that can do as much as Adobe Photoshop. It gives me the feeling that with enough time, any touch-up or special effect can be achieved. If you want to experiment with and process high-quality color images on the Mac, this program is a must.—Arne Hurty

See Where to Buy or circle 704 on reader service card.

### QuickDraw Page Printer

### PERSONAL LASERPRINTER II

Pros: Excellent print quality and paper handling; outline fonts provide typographic versatility; well-designed software; easy to set up. Cons: Can't be shared on a network; only one SCSI connector; some documents require two-step printing. Company: GCC Technologies.

Requires: Mac Plus; hard disk. Mac II; 2MB recommended. List price: \$1399.



GCC Technologies' original Personal LaserPrinter (PLP) cost about half as much as

PostScript-based printers such as the LaserWriter IINT. But at \$2599 (later reduced to \$2099), its price wasn't as personal as many would have liked. What's more, the PLP's Ricoh 1060 engine printed black areas poorly, and its spill-prone toner cartridges darkened many a carpet.

With the Personal LaserPrinter II, GCC has addressed all three criticisms. The PLP II uses a new print engine that produces deep, rich blacks yet still renders fine serifs and hairline rules well. A snap-in toner cartridge lets you keep your vacuum cleaner in the closet. And the price? \$1399—now, that's getting personal.

### It's Oki with Me

The PLP II weighs only 24 pounds and fits neatly on a desktop. Setting up its print engine, an Oki Electric OL-400, is a breeze: simply slide in the EP cartridge, which contains the photosensitive drum (good for about 15,000

pages) and snap in the toner cartridge (rated for 2500 pages). Like most laser printers, the PLP II prints 300 dots per inch.

The PLP II's paper cassette holds 200 sheets. That's 50 sheets more than the original PLP held and twice the capacity of the PLP's closest price competitor, the Qume CrystalPrint Publisher, a PostScript clone also known as La Cie's Panther PDX, Abaton's Quickstep, and Jasmine's DirectPrint. And unlike the CrystalPrint Publisher, the PLP II's cassette offers a self-centering manual-feed slot for printing on envelopes and other nonstandard paper sizes. The PLP II even comes with a desk accessory that prints envelopes and doubles as an electronic address book.

Next to the paper cartridge on the front panel is a small display screen and keypad used to view and adjust several key settings. Among other things, you use the keypad to change the printer's SCSI address, adjust print density, print a test page, and specify a *sleep* period. The latter is a handy feature: after a preselected interval without activity (two, four, six, or eight minutes), the printer goes into a semitorpid state—drawing only 60 watts of power instead of 800 and making virtually no noise instead of its normal hum, which isn't bothersome anyway.

Oddly, the PLP has just one SCSI connector instead of two. That means the printer must always be the last device in a SCSI chain. For most people, that won't be a problem. It could complicate life, however, if you have multiple SCSI devices containing internal terminator resistors. You may (continues)



The Personal
LaserPrinter II from
GCC combines
affordable price with
excellent print quality.

# Big-league stats for the serious player.



### When you want more data analysis power from your Macintosh, the only game in town is SPSS.

When you've got to know the score, you need more than an ordinary stat package. You need the most powerful data analysis software ever created for the Macintosh: SPSS.

Only SPSS for the Macintosh gives you all the same analytical capabilities as our legendary SPSS mainframe and workstation software. So you get more ways to turn data into knowledge.

Our Macintosh user interface puts you in control of data and file management. Basic and advanced statistical procedures like time series analysis and forecasting, nonlinear regression, discriminant analysis and more. Plus award-winning presentation graphics and tables to let you display your results.

In short, you get more statistical methods and features with SPSS than with any other Mac software.

And SPSS also gives you one other

vital feature: the SPSS support team that's come through for over a million users in the last 20 years.

So if you're serious about winning, don't settle for anything less than the power you need. Find out more about SPSS by calling

1-312-329-3323.

And get the knowledge to be first in your field.



Best in the final analysis.

444 North Michigan Avenue, Chicago, Illinois 60611 SPSS International BV: Avelingen West 80, P.O. Box 115, 4200 AC Gorinchem, The Netherlands spend an afternoon twiddling terminators to get everything working. As an alternative, you can buy a two-connector adapter from GCC.

### **The Software Side**

If you're familiar with the original PLP or with GCC's WriteMove or Write-Impact printers, you'll feel at home with the PLP II's software. Like the aforementioned printers, the PLP II uses Bitstream outline fonts. The fonts are stored on a hard disk (yes, a hard disk is required). The PLP II comes with the Courier and Symbol fonts, as well as Bitstream versions of Helvetica, Helvetica Condensed, Times, and Palatino (called Swiss, Swiss Condensed, Dutch, and Zapf Calligraphic, respectively). Additional fonts are available from GCC, as is a converter application that lets you use Bitstream's MacFontware library with the PLP II. I also used the PLP II with Adobe Type Manager with very good results.

During a print job, the PLP II's print driver uses the outlines to generate font bitmaps in the sizes required for the current page. A bitmapped image of the page is then created on the Mac's hard disk and transferred via the SCSI bus to the printer. A set of prebuilt font bitmap files containing common point sizes also accompanies the printer. You can reduce printing times by copying these prebuilt fonts to the hard disk; they use about a half-megabyte of disk space.

### Let the Mac Do It

This let-the-Mac-do-it approach to imaging pages is identical to that of the original PLP and has the same advantages and drawbacks. On the plus side, this approach allows the PLP to be electronically simple, and therefore, inexpensive. A PostScript printer, by contrast, does its own page imaging using an internal microprocessor and several megabytes of costly RAM and ROM (see *Macworld*, October 1989, "Paging All Printers").

On the negative side, the PLP's approach can be slow. How slow depends on the print job and the Mac. You must endure long printing times if you print typographically complex documents using a 1MB Macintosh Plus. (And to rub salt in the wound, the PLP II does not work with popular

print spoolers such as SuperMac's SuperLaserSpool.) With simple documents printed from a multimegabyte Mac II, performance is a bit more sprightly.

If you consider a maximum of 4 pages per minute (ppm) sprightly, that is. Still, the PLP II is generally faster than Hewlett-Packard's DeskWriter, a low-cost, 300-dpi ink-jet printer. You can boost performance by about 15 seconds per page by adding an optional 1MB upgrade to the PLP. Adding more memory and an accelerator board to the Mac boosts performance with complex documents, but you eventually hit the 4-ppm wall. (At press time, GCC announced the PLP IIS, an 8-ppm printer available for \$1899.)

Another drawback is that you sometimes have to print complex documents in two steps, especially on 1MB and 2MB Macs. Two-step printing isn't complicated—you simply quit the application you're using and then run the PLP's Print Manager utility—but it isn't terribly convenient, either. Adding memory to the Mac usually eliminates the two-step routine.

### My Personal Opinion

Because the PLP II requires the Mac to create page bitmaps, it can't be shared on a network. If you want to be able to print from more than one Mac, you'll be better served by a Post-Script printer, which shares easily. You'll also need a PostScript printer if you plan to use PostScript printer if you plan to use PostScript-oriented applications such as Adobe Illustrator 88 or Aldus FreeHand. And if performance is more important than cost, you might consider Qume's Crystal-Print Publisher or one of its cousins, although, be cautioned, they don't do envelopes.

But if you are looking for top-quality output, compatibility with the vast majority of Macintosh applications, and the security that comes with buying from a veteran Mac hardware manufacturer, buy the PLP II. It is reliable, its software is well designed, and its manual is excellent. And its output looks great, even if you do have to wait a while to see it. Look at it this way: while you are waiting, you can think up ways to spend the money you saved.—Jim Heid

See Where to Buy or circle 792 on reader service card.

### — \* -

### Text-Effects Utility

### TYPEALIGN 1.0

Pros: Adds text-positioning capabilities to Adobe Type Manager fonts; good user interface. Cons: Works only with Type 1 fonts; limited number of effects. Company: Adobe Systems.

Requires: Mac Plus; System 6.0.2; Adobe Type Manager. List price: \$99.95.

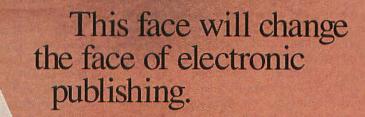
In the biological world, many organisms adapt to certain ecological niches to cut down on competition. Adobe Type Manager evolved to fill the need for readable fonts for low-resolution devices such as the Mac's screen and dot matrix printers. Now, a new program called TypeAlign has developed a symbiotic relationship with ATM, enhancing the capabilities of the latter with a number of special effects (see Reviews, Macworld, February 1990 for a review of ATM). While ATM displays readable text at almost any size, characters become distorted when placed at an angle. TypeAlign lets you place text on a slanted or curved path, retaining smooth character shapes for screen display and low-resolution printing.

TypeAlign was developed by Emerald City Software. Adobe Systems recently acquired Emerald City and will be distributing and supporting all the Emerald City products.

### **Instant Effects**

TypeAlign is installed as a desk accessory, making it available from within any application. Say you're laying out an ad in PageMaker, for example, and want to add the word *New!* at an angle. Open up TypeAlign, and a text-effects window appears (see "Align 'Em Up"). Select the straight line from the tool palette and draw a line at any angle (unfortunately, TypeAlign provides no digital readout, so you'll have to set the angle by eye). Next, click on the text tool and start typing. Smooth, readable text appears on the slanted line in Times, the utility's default font.

You can change the font or other text attributes—size, style, or shading—by selecting a block of text and choosing Type from TypeAlign's menu. (continues)



The beautiful reproduction you're looking at is the direct product of electronic publishing. Surprised?

The photo is by Andrew Unangst, renowned for the graphic beauty of his work. The unprecedented resolution of this page is by the Nikon LS-3500 Film Scanner, soon to be renowned for the graphic beauty of its remarkable, high definition detail and color fidelity.

Unangst worked with a Nikon F3. The LS-3500 worked with a Mac® II. But any MS-DOS® or UNIX®-based system would have been equally adept.

The original was a 35mm positive. But a 35mm negative, color or monochrome would have worked brilliantly, too.

The crisp enlargement is the result of a scanning resolution that's far superior to any previously possible. A precision Nikon lens was conceived specifically for the task. The scanner has resident intelligence so operation is effortless. And our proprietary color separating software can be used easily by your receptionist and creatively by your Da Vincis. All with unmatched precision, control and economy.

The machine is about half the size of a Mac. And goes for about what it now costs you merely to compose film seps for a couple of ads just like this one. But then, they could never be quite like this one.

Don't just take what we've said at face value. Find out more, call or write:

Value. Find out more, call or writ Nikon Electronic Imaging,

Dept. EI-B, 101 Cleveland Ave., Bayshore, NY 11706,

(516) 222-0200 Ext. 324. Or call 1-800-NIKON-US (645-6687) for the

dealer nearest you.

NIKON. ELECTRONIC IMAGING

© 1990 Nikon Inc.



Align 'Em Up
TypeAlign lets you place text at an angle or on an
arc or free-form path. You can pop effects directly
into the document you're working on, or save them
for later use.

You can also add color to any or all characters in an effect if your screen and printer support color. TypeAlign lets you mix fonts, styles, shades, and sizes in a single effect. (Keep in mind that since TypeAlign works in conjunction with ATM, it works only with fonts supported by ATM-namely, the Type 1 PostScript fonts manufactured by Adobe and a few companies that license Adobe's font technology. The font-selection situation is improving, however; the recently released version 2.1 of ATM supports Bitstream fonts, and Image Club Graphics plans to release a utility that converts non-Adobe fonts to Type 1 fonts.)

You can edit an effect as you work on it, centering or justifying the text, for example, or adding or deleting characters. A kerning control lets you add or subtract space between characters. And you can zoom in for a closer look and increased kerning precision. (I had no trouble editing text on a Mac II, but found cursor positioning sluggish and ornery on a Mac Plus.) A template option lets you "see through" the TypeAlign window to the document below, to see how TypeAlign text will look in the document.

When an effect is ready, you can copy it to the Clipboard and paste it into your document, or save it as a PICT or EPS file. You can also save a TypeAlign effect in Illustrator 88 format and edit it with that program.

In addition to the angled line, TypeAlign lets you place text on an arc or on a free-form path you draw; you can reshape the freehand line by dragging control points or by adding and dragging new ones. Once you've placed text on a path, you can distort it (into a perspective effect, for example) by dragging a handle.

TypeAlign works with a goodly selection of Mac programs, including word processors and page-layout applications. It doesn't work with Canvas, CA-Cricket Draw, or SuperPaint, however, and although TypeAlign works with paint programs, these programs display text as bitmaps that don't take advantage of high-resolution printers such as the LaserWriter. Like its companion ATM, TypeAlign is a boon for ImageWriter owners, creating crisp text output at virtually any size. (Even ATM can't produce perfect ImageWriter characters at sizes below 8 points or so, but this shouldn't bother most TypeAlign users, since the program's effects are appropriate for display type at large sizes.) TypeAlign works with both QuickDraw and Post-Script printers, taking advantage of the resolution and printing capabilities of whatever printer you use.

### The Bottom Align

To increase TypeAlign's chances of survival, Emerald City employed a technique found among plants and animals: mimicry. The purple-and-yellow box with a large red letter closely resembled ATM's package, enticing ATM owners to go through the familiar routine of paying \$99 for a text utility. Adobe purchased TypeAlign but may not even have to redesign its package.

Is TypeAlign worth \$99? That's a matter of opinion. If you want a utility that's available at the flick of the mouse to place readable text on a slant, arc, or free-form path, then TypeAlign is a worthwhile investment. Because of its specialized typological niche, TypeAlign has a fairly limited repertoire, but what it does it does well.

If you already own a PostScript graphics program like FreeHand or Illustrator or a draw-and-paint program like SuperPaint, you can achieve many of TypeAlign's effects. Personally, I don't mind seeing scruffy-looking angled text on the screen, as long as it prints out cleanly on my LaserWriter. But if you've found that ATM enhances text on your ImageWriter or other printer, you might well want to enhance ATM's capabilities with TypeAlign.—Effert Fenton

See Where to Buy or circle 812 on reader service card.



### External Fax Modem

### ABATON INTERFAX 24/96

Pros: Operates in background with or without MultiFinder; prepares documents for sending prior to transmission; displays faxes on screen; supports distribution lists; modem includes MNP Class 5. Cons: Allows phone-directory entries by name or company, not both. Company: Abaton (a subsidiary of Everex Systems).

Requires: 512K; System 6.0. Hard disk recommended. List price: \$599.



Although stand-alone facsimile machines are still too expensive for many small

businesses, fax modems such as the Abaton InterFax 24/96 offer Macintosh users standard fax capabilities at a more modest price. The 24/96 is a dual-purpose unit. It sends and receives faxes at 9600 bits per second (bps) and functions as a 2400-bps Hayescompatible data modem.

### **Hardware Setup**

All you need to do to set up the hardware is connect the serial cable from the 24/96 (25-pin) to the Mac's serial port (8-pin), string the telephone cord from the 24/96 to a phone wall jack, and plug in the power cable. All cords and cables are supplied. Optionally, you can also connect a phone handset to the unit. The phone operates normally whether the 24/96 is on or off.

The software includes InterFax Control (a Control Panel device that enables you to monitor transmissions), FaxMaker (a Chooser-level print driver), two special-purpose fax fonts: SWA Swiss and Dutch (Helvetica-style and Times-style fonts), and the Inter-Fax program.

### The InterFax Program

Before using the 24/96 for the first time, most users will want to run the program's configuration routines. The modem configuration dialog box allows you to enter your name or a brief message that will appear in the page header whenever you send a fax, how many rings the unit must sense before answering the phone, and the speaker (continues)

# Color Hardcopy To The Macs.



Once you've created that breathtaking color masterpiece or designed the winning presentation on your Macintosh™ II, bring those colors to life. For brilliant color hardcopy, choose a Mitsubishi® color thermal printer.

Mitsubishi printers can be used with virtually all Macintosh II-based applications. These printers are easy to use and will excel in any Mac II environment where high quality, color hardcopy is essential.

The G330, G370 and G650 color thermal transfer printers unleash all the bold, bright colors of your designs—every time. And for near-photographic quality, the S340 sublimation printer utilizes a state-of-the-art "dye-diffusion" process capable of printing up to 16.7 million colors. The S340

received the 1989 MacUser Magazine Editors' Choice Honorable Mention Award for Most Significant Hardware Product.

Mitsubishi color thermal printers are the logical choice for a wide variety of Macintosh II color graphic applications including graphics design, business graphics and all other color imaging applications. You'll get color to the Macs!



To find the location of your nearest Mitsubishi Electronics dealer, call 1-800-556-1234, ext. 54R in the U.S. and Canada (in California, call 1-800-441-2345, ext. 54R).



Mitsubishi Electronics America, Inc., Information Systems Division, 991 Knox Street, Torrance, CA 90502.
Mitsubishi Electric Sales Canada, Inc., 8885 Woodbine Avenue, Markham, Ontario L3R 5G1.

© 1990 Mitsubishi Electronics America, Inc. Mitsubishi is a registered trademark of Mitsubishi Electric Corp., Tokyo.

Macintosh is a trademark of Apple Computer, Inc. Screen image produced with permission from the following company (trademarked software package name follows company name): Strata, Inc. (StrataVision 3D); Images printed with permission from the following companies (trademarked software package name follows company name): Aldus Corp. (Freehand); Strata, Inc. (StrataVision 3D); Mac 'N' Stein (Thoughts).

volume. Other configuration options specify whether or not page headers on faxes you receive should be printed, where on disk incoming and outgoing mail should be stored, and how—or if—you should be notified of incoming faxes.

Like any good fax application, Abaton's lets you set up a phone directory that can contain as many as 800 entries (and you can create multiple directories). If addressees have something in common, you can combine entries into distribution lists. When you want to send a fax to each of your sales reps, for instance, you just select the appropriate distribution list and let the 24/96 take care of them one after another.

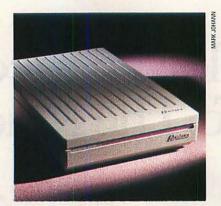
To save time and paper, the 24/96 includes an on-screen viewer that lets you examine any incoming or outgoing faxes. Screen magnification can be set from 5 to 1000 percent, and the image can be rotated 90 degrees in any direction—which is a great way of handling faxes that were sent upside down.

The program logs all completed transmissions, both incoming and outgoing (see "Delivered Mail"). Unsuccessful transmissions, or faxes that have been scheduled for later transmission, appear in a separate Fax Schedule window as miniature envelopes with the recipients' names and a stamp icon. The image on the stamp shows if there were problems with the transmission.

The biggest advantage of using a fax modem is that, since most of your documents are created on the Macintosh and stored on disk, there's no need to scan them before sending. Of course, a fax modem's no good if you need to send copies of information that hasn't been created on the Macintosh (ad slicks or contracts, for example). Although the 24/96 has no scanning capabilities, the 24/96 can control a scanner if you should decide to add one to your system. Options are also provided to convert fax files into graphics (PICT, MacPaint, or TIFF formats), and to change the same graphic file types into faxes.

### **Sending and Receiving Faxes**

The FaxMaker driver allows you to create faxes from within almost any



Abaton InterFax 24/96

application that uses the standard Macintosh Print routines. All you have to do is open the Chooser from the Apple menu and select the FaxMaker icon as the current printer. Until you reset the Chooser, any application that you print from automatically sends the current document as a fax instead.

When you select Print from a word processor, spreadsheet, or other program, the FaxMaker's Print dialog box pops up. To send the document as a fax, you merely indicate the desired quality and page range, then click Schedule to select a destination from the phone directory (or to enter an unlisted one). You can also set a special delivery date and time, if you wish. Otherwise, the transmission occurs immediately.

For transmission, the file is compressed and font substitutions—if indicated—are automatically made. Because the Macintosh screen resolution is about one-third of a fax machine's printing resolution (approximately 200 dots per inch), fonts look best if you have a size that is three times as large as the font in use. The SWA Swiss and

Canada and Company of the Company of							
Date	Time	Fax Machine	p.	Liaps.	Document		
2/14/90	0:45 Ft1	Clara Daggett	141	EAT	2/14/30 Fex to Clara	1	
2/18/90	9:45 PH	Japan Tay & Hobby	40	0241	FAX depart	4	
2/10/90	13 48 AV	Dartietet:		627	FAX Last Report	а	
279/90	4 20 FT1	Teomo	100	0.251	Tions Last Report	ä	
2/9/90	3 #2 PH	Remotary be		0 20	Rosertar Last Responsit	a	
2/9/90	3 254 F25	Tatto Software, but	000	0.25	Tallo Last Request	а	
2/9/90	3.5375	DNK Corporation of America	4	026	SON Last Request	d	
2/9/90	3.50 PH	HAL AMPRICA	100	027	NAC Last Request	а	
2/9/93	3 47 514	Keros/Setra	*	E257	FAX Seks Legt Request	а	
2/9/90	3:44 FM	Sondwell industrial Co.	200	0.28	FAX Cast Regiest	a	
2/9/90	1.4170	FCI	A.	0.25"	FAX FEE List Propert	ă	
2/9/90	3 30 FF1	Deta East Liffe, tro	1	0.271	FAN Data East Last Request	d	
279750	3 30 PH1	Beesley, Inc	1	0491	TAV Sweden Last Enquerit	á	
2/1/90	O DO AM	Antilum Entertainment	SA S	844	FAX the Block	8	

### Delivered Mail

The InterFax application maintains a log of completed outgoing faxes, showing the date, time, recipient, number of pages, and the connect time. With this log, even if you schedule transmissions for the wee hours of the morning, there's no need to wonder if they got through.

Dutch fonts that come with the Inter-Fax 24/96 include the appropriate triple-size fonts for any point size between 9 and 24.

Receiving a fax with the 24/96 requires no action on your part—other than making sure that the 24/96 and the Mac are on. The standard notification for an incoming fax is that the Apple icon changes to a flashing telecommunications symbol. You can also set a beep tone to indicate a successfully received fax.

### The InterFax cdev

The InterFax cdev software shows how the current transmission is progressing and includes detailed information on the speed, fax quality, and number of pages; notifies you of unopened faxes; and shows when the next outgoing transmission is scheduled. The cdev also offers the only way to stop a transmission in progress. It also reports errors and automatically retries a call five times—at five-minute intervals.

### **Modem Features**

The 24/96's 2400-bps data modem includes built-in diagnostics, autoanswer, support for the Hayes AT command set, MNP Classes 2 through 5 (for automatic error control and data compression), and voice-to-data switching. To activate voice transmission you simply pick up your phone handset. You don't even need to do anything to switch between modem and fax capabilities. The 24/96 automatically uses whichever mode is appropriate for the current transmission. Nine LED status lights mounted on the front panel show what the fax or modem is up to at any moment.

In modem mode, the 24/96 operates flawlessly in my tests. In fax mode, the only problems I encountered were the result of my not reading the entire manual before plunging in. I didn't benchmark the 24/96 against a standalone fax machine, but I found the transmission times acceptable (about 24 seconds for a half page of text). If you're considering buying a fax modem, the 24/96 should be high on your list of candidates, and it comes with a one-year parts-and-labor warranty.

### -Steven Schwartz

See Where to Buy or circle 702 on reader service card.



### AW...WHAT THE HECK!

When we introduced this product we had to ask ourselves, "What should this software cost?" To help with our decision we hired accountants. We consulted with industry "movers and shakers." We purchased the finest spreadsheets available. Many people said, "The software should sell for \$3,000.00 or more." Others said, "It's good, darn good—sell it for at least \$2,000.00." Opinions varied. Finally we said, in the Great American Tradition,

DesignCAD has disproved a common misconception about computer software: you don't always have to spend a lot of money to get high-power quality software. DesignCAD for the Mac has features of CAD systems costing thousands of dollars! Yet, DesignCAD is priced at least 50% to 80% BELOW comparable CAD packages . . . AND DESIGNCAD IS BETTER!

"Aw . . . What the Heck! Let's see the competition beat this \$699.00.

### **Excellent Software Compatability!**

Along with extensive hardware support, you get software compatability! DesignCAD comes with (at no extra charge, of course!) file transfer utilities to let you read and write files in other formats such as IGES, DXF, HPGL, XY or XYZ coordinates, ASCII text files, EPS, Postscript and PICT or PICT2. NOW THAT'S COMPATABILITY!

### DesignCAD offers fully integrated 3D geometry!

Need 3D capability? Great! Look at how DesignCAD fully integrates its very powerful 3D mathematical foundation with excellent 2D drafting attributes, which are in a league all of their own, offering first-rate ease of learning and use.

### DesignCAD is easy to use!

Tests prove that DesignCAD's user-friendly interface allows you to quickly produce complicated drawings in a fraction of the time required from the competition. Flexibility and power found within DesignCAD means you save time and money! DesignCAD is truly the CAD system that ANYONE can use!

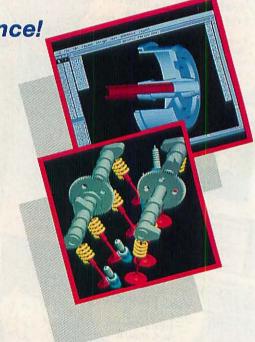


### only \$699

### Features Include:

- Floating-Point precision
- Math coprocessor support
- Automatic & Associative Dimensioning
- Tolerance options for Dimensioning
- User defined Arrowheads
- 500 predrawn Symbol Libraries
- 256 Layers
- Cubic Spline Geometry
- Bi-Cubic Surface Geometry
- Trimming
- Related and/or Auto-Update Viewing
- "Real-Time Rotation"
- Automatic Hidden-Line Removal
- Wireframe or Solids
- Perspective or Orthographic Calculations
- Ray Casted shading
- Specular Highlighting
- Unlimited color support

The list goes on and onl
For a closer look, contact your local
Apple Authorized Dealer





## DesignCAD 2D/3D

**Professional CAD System for the Macintosh** 



### COLORSET 1.5

Pros: Enables capture of color images with gray-scale or black-andwhite flatbed scanners; empowers 4-bit scanners to produce 8-bit images with 256 shades of gray; XCMD permits display of color images in Hyper-Card stacks. Cons: Difficult to scan bound materials; works well only with certain scanners. Company: Studiotronics. Requires: Mac SE/30; 2MB RAM; grayscale scanner. List price: \$399.95.

If you own a black-and-white scanner, but your Macintosh

system uses color, you've probably wished many times for some way to capture color images for inclusion in a desktop presentation or a publishing project. Colorset, an ingenious combination of color acetate filters and software from Studiotronics, provides just such a capability.

### **Not a Scam**

Scanning in color with a black-andwhite or gray-scale scanner sounds at first like it's too good to be true, but a scanner that's color-blind has a great deal in common with one that isn't. Both read gray-scale information using the same type of light-detecting sensor, a charge-coupled device (CCD) array. Color scanners differ in that they record colors by positioning three color filters (red, green, and blue) between the image being scanned and the CCD array. The simplest color scanners scan an image three times, changing the filter with each pass. The information from the three scans is then combined to form a color image. Colorset works the same way, except you have to pitch in and change the filters yourself.

When you initiate a scan with Colorset you indicate the region of the image you want to scan. Then the software prompts you to position one of the three filters between your image and the glass plate of your scanner for each of three successive scans. Colorset then combines the information from all three scans and presents a color image in an editing window.

Regardless of the kind of monitor

you have, you're given the option of creating an image in 8-, 16-, or 32-bit mode (256; 65,536; or 16.7 million colors). If your monitor is limited to 8 bits, ColorSet will display scanned images using 256 colors but still retain all of the color data for the color mode that you selected when the scans were made. In other words, you don't need a 32-bit color monitor to create a 32bit image. If your scanner, like the Apple Scanner, only captures 4 bits per pixel, the images will be limited to a maximum of 4096 colors. However, images scanned in 32-bit mode with 8bit scanners can contain a maximum of 16.7 million different colors.

### **Editing Tools**

Although Colorset doesn't provide all the capabilities of an advanced image processing program like Photoshop or ColorStudio, it does supply enough editing tools to create usable images most of the time. Six slider controls enable you to adjust the contrast and brightness of each of the primary colors. To adjust the contrast or brightness of a specific area of an image, you use a brush tool to select the desired area first. If you wish to change a subset of colors, you first select the desired colors by clicking or shift-clicking on the appropriate color squares in a color palette box. Although Undo isn't available after each adjustment,

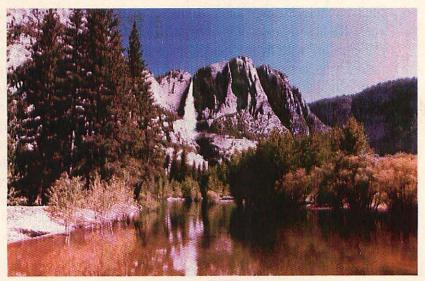
you have the ability to mark (that is, save) the condition of the color palette after each change that you decide to keep. Choosing Revert to Original later on will then reset the image to the marked palette instead of the original palette. When you finish editing your image you can save it to disk in 8-bit PICT, 32-bit PICT, or in color or gray-scale TIFF format. By saving a scanned image in grav-scale TIFF format, users of 4-bit scanners can create 8-bit images with 256 shades of gray.

### **Registration Woes**

A major drawback to using Colorset is the need to maintain perfect registration of the three scans. Typically this is achieved by securing the top of the image to be scanned with a low-tack tape (a roll of 3M's Post-it Correction & Cover-up Tape 658 is included with Colorset). Securing a page bound in a magazine or book is difficult, if not impossible. In most cases you'll have to either cut out the image or remove the page from the binding. Also irksome is the need to keep the filters clean and free of lint.

### **All Scanners Are Not Equal**

Colorset works better with some scanners than with others. In my tests with the Apple Scanner I had to manipulate the images to bring out blue hues (continues)



RGB Yosemite Falls

The original image was a 4-by-5-inch color print that was scanned at 150 dpi using a 4-bit Apple Scanner. Adjustments were made to enhance the contribution and contrast of the blue component of the image. The final image was cropped, fine-tuned, and color-separated using Adobe's Photoshop software.

## **Macintosh**<sup>®</sup> Meets Its Match.



It's a match that runs deeper than the sleek new lines and compact cabinetry of MacinStor's high capacity storage subsystems.

It's first a performance match. Because MacinStor,™ with average seek times as low as 14.5 ms, runs faster. And our rigorous systems engineering turns that raw speed into maximum throughput, delivered directly to the most demanding applications.

It's also the perfect productivity match. With offerings to match any user need. Hard disk or write-once and erasable optical. With capacities up to 1.3 gigabytes. And with powerful, easy to use utilities software to minimize start-up hassle for the beginning user, and maximize productivity for the most advanced user.

Here is a *matched* story that's really unmatched. A story featuring unparalleled quality and reliability. The best documentation and support in the business. And the strength and long-haul commitment of the industry leader in high capacity storage. Which is why MacinStor is again an award-winning story, honored recently with the prestigious 1989 MacUser Eddy Award for "Best Storage Subsystem\*"

So call today for the MacinStor reseller where you can meet your Macintosh match. (408) 879-0300. Storage Dimensions, 2145 Hamilton Avenue, San Jose, CA 95125.



To be called circle 414 on reader service card

correctly. However, the clarity of the images I got was surprising, considering the inherent limitations of using a 4-bit scanner to create color images. Studiotronics claims that the best results are obtained with the Hewlett-Packard ScanJet Plus and that acceptable images can be obtained with Abaton's 300/GS scanner. Due to the limited range of control over brightness and contrast with Microtek's scanners, however, Studiotronics does not recommend using Microtek scanners with Colorset.

### Color in HyperCard Stacks

Included with Colorset is an XCMD for displaying color PICT files in a display window from within HyperCard stacks. Using the ShowScan installer stack you can install the XCMD in any of your stack projects or into your Home stack. When you call the XCMD from a HyperCard script you need to specify the file name and path of the PICT file you wish to display and the x and y coordinates of the top left corner of the window that will contain it. You can also specify the number of seconds that ShowScan will display the image; by setting the delay value to zero, you can make the image window remain on screen until you click the mouse button. Since ShowScan's display window typically covers most of HyperCard's window, you'll need to use a graphics program to annotate your color pictures if you want text to accompany an image.

If you already own an Apple Scanner or HP ScanJet Plus, Colorset is a practical and economical way to get color images into your Macintosh. If the pictures you need to scan are bound, or if you need to scan a lot of color images on a frequent basis, consider purchasing a color scanner instead. Keep in mind that working with color images obtained from either Colorset or a color scanner, particularly large ones or those that are 32 bits deep, will tax the resources of almost any Macintosh system, particularly with regards to the amount of disk space you'll need. However, scanning color pictures for display on the Macintosh is undeniably a lot of fun and can bring new ideas and creativity to your work.—David L. Foster

See Where to Buy or circle 715 on reader service card.

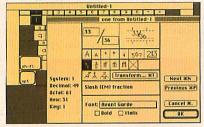
### Font-Creation Software

### PARAFONT 1.02

Pros: Closely approximates traditional typographic symbols; makes modification of PostScript fonts easy; allows generation of entire sequences of related symbols with a single command; can apply identical set of modifications to any number of original fonts. Cons: Para-Font fonts consume more printer memory than comparable conventional fonts. Company: Design Science. Requires: 512KE. List price: \$99.

Despite the unarguably high quality of most PostScript fonts, the traditional typographer can still find subtle aesthetic failings to criticize. For example, since Macintosh fonts lack genuine fraction characters, you have to create ungainly simulations by typing out full-size numerals separated by a slash character. And have you noticed how all the numerals in a Macintosh font are allotted the same amount of space on a line, regardless of each numeral's actual width? That's fine when you want to line up digits in a table, but it results in unnatural-looking spacing for numbers within a block of text.

Design Science's ParaFont lets you quickly and easily correct these and similar deficiencies by generating symbols from existing characters in any PostScript font. Of course, you could use Fontographer to hand-tailor symbols for every font you use, character by character—assuming you have the time and design skills. But the ParaFont solution is much faster, and the re-



### Almost One

The highlighted 1 in the background keyboard layout window has been selected for modification by ParaFont. In this particular case, a fraction composed of several scaled numerals will be substituted for the 1.

sults will satisfy all but the pickiest typographers.

### **ParaFonts**

ParaFont relies on the same basic techniques utilized by such font specialeffects packages as Laser FX and Smart Art, though the emphasis here is on typographic detail rather than flash. The fonts created with any of these programs contain no character outlines of their own. Instead, they simply consist of PostScript language commands that create and then modify copies of entire fonts or individual characters already resident in the printer. This results in an inherent, but usually tolerable, drawback: a ParaFont font consumes more printer memory than an ordinary font, since both the original font and the copy must be present.

ParaFont can change a character's proportions by scaling the vertical and horizontal dimensions independently. The program can slant a character forward or back, or reposition it relative to the text baseline. ParaFont can change the amount of space to the right of the character, the thickness or relative position of an accompanying underline, or the width of the outline that prints when you choose Outline on the Style menu. For convenience, you can reassign a character to a new key, or combine several characters into one (to create complete fractions that you can type with a single keystroke, for instance). In fact, you can even merge characters from other fonts into the base font.

Relying on these few basic modifications and ParaFont's built-in options, you can rectify standard Mac fonts' most common typographic omissions. To create a one-key typographically correct fraction, for example, you just type the numerator and denominator into the appropriate dialog boxes. The program then downsizes the original numerals to 65 percent of their width but only 60 percent of their height—a change of proportions consistent with typographic convention. You can create fractions with a diagonal bar or horizontal bar; in either case, ParaFont positions the numerals properly as numerator or denominator, as the case may be. If you can't anticipate all the (continues)

# Don't Let the Price of PostScript® Printing Take a Bite Out of Your Apple.

rascript for the Macintosh Ultrascript for the Macintosh Ultrascri

UltraScript<sup>™</sup> for the Macintosh<sup>™</sup>
Print PostScript Documents on Non-PostScript Printers
—even the Apple®ImageWriter<sup>™</sup>

UltraScript for the Macintosh is QMS' software solution for printing PostScript documents on non-PostScript printers.

Print PostScript documents transparently from within any Macintosh application.

UltraScript has a built-in spooler option that can turn your Macintosh into a network print server.

There are two versions of *UltraScript for the Macintosh. UltraScript*, at \$195, includes 15 typefaces. The *Plus* version, at \$495, includes 43 typefaces and the built-in spooler.

UltraScript includes an outline font scaling module that generates on-the-fly, high-quality printer and screen fonts at any size for true "WYSIWYG" capability.

UltraScript uses the same licensed typefaces as today's popular PostScript language-based

printing systems. Additional font packages are available for only \$49.95.

With *UltraScript* software, PostScript printing won't take a bite out of your budget!

Call QMS today at: 800-635-3997 or 408-986-9400



The following are trademarks or registered trademarks of their respective companies: UltraScript, QMS, and the QMS logo of QMS inc.;
Adobe and PostScript of Adobe Systems, Incorporated; Apple, MacIntosh, and ImageWriter of Apple Computer Incorporated, Copyright © 1990 QMS, Inc.

fractions you'll be using ahead of time, you can also generate two sets of similarly scaled individual numerals, one set raised above the baseline for use in numerators, the other on the baseline for denominators.

ParaFont can also turn ordinary capital letters into small caps, which are often used for titles, headings, and other items that benefit from a delicate emphasis. In this case, ParaFont shrinks the letter to 90 percent of its original width and scales its height to a little more than that of a lowercase x in that font. Similarly, another option creates elevated, miniaturized superior characters, which are smaller, not as high as the standard superscript, and have different proportions. You can have the program build facsimiles of the ligatures that are missing from most Mac fonts. Other numeric functions automatically add proportional spacing to standard numerals or transform them into old-style numbers (where the numbers descend the baseline) for use in formal text. Finally, for situations where these automatic modifications don't fit your needs. ParaFont lets you type in your own scaling, slanting, and spacing values for each character.

### **Easy Transformations**

ParaFont is extremely easy to operate. For the main screen you can choose a Key Caps-like representation of the keyboard layout or a simple table of characters. The one design gaffe I uncovered in ParaFont is that this window fills only about half the display and can't be enlarged to show the entire font at once. Double-clicking on a character in the main window (which looks a lot like the keyboard in Key Caps) brings up the transformation dialog box for that particular character. Alternatively, you can select a group of keys in the main window's keyboard graphic; ParaFont then automatically generates a series of modified characters en masse. For example, you can have the program generate a complete set of commonly used fractions all at once.

By substituting new characters for rarely used symbols, you can produce a ParaFont font that includes all the ordinary letters, numerals, and punctuation marks from the original font, along with a generous supply of new fractions, small caps, and ligatures. When a font is complete, you just tell the program to save it in PostScript and screen formats. If you want to apply the same modifications to another font, you simply change the base font and resave using a new name.

For most Mac users, the quality of ordinary PostScript fonts is more than sufficient. But if you want your desktop published documents to look professionally typeset down to the finest detail, get a copy of ParaFont.

### -Steve Cummings

See Where to Buy or circle 791 on reader service card.



### HyperCard and CD Audio Program

### CD COMPANION SERIES: LUDWIG VAN BEETHOVEN SYMPHONY NO. 9

Pros: Highly interactive; beautifully designed. Cons: None. Company: The Voyager Company. Requires: Mac Plus; hard disk; CD ROM player. List price: \$99.95.



Reading about great music is a lot like reading about great food. No one would argue

that reading a restaurant review is anything like eating the meal it describes; likewise, reading about a symphony is a pale substitute for hearing it performed. Now, however, The Voyager Company's first CD Companion Series title, Beethoven's Ninth Symphony, uses the Mac to bridge the gap between first-hand experience and expert commentary by using HyperCard to control a CD player. The product consists of a five-level HyperCard stack, written by UCLA professor Robert Winter, and a CD with a digitally remastered 1966 Decca recording of Beethoven's Ninth Symphony, performed by the Vienna Philharmonic with Joan Sutherland, Marilyn Horne, James King, and Martti Talvela.

### Exposition

CD Companion, though, is much more than just a tour through the symphony with simultaneous translation. Each of the stack's five levels offers a fully interactive way to explore the music at your own speed and in your own sequence, and each level is designed to take you through the symphony in a different way. All the levels work together; at any point it is easy to switch from one to another to go into a particular subject in greater depth, return to the symphony for uninterrupted listening, pause the music to look up unfamiliar terms in a glossary supplemented with audio examples from the CD, search for any word on any card, or refer to on-screen help. By conveying the same information in a variety of ways, CD Companion allows you to learn about the symphony in whichever way you learn best.

### Development

The first level, The Pocket Guide, presents the symphony structurally; all four movements and their sections appear on one card for easy access in any sequence. Click on the Scherzo da capo in the second movement, and you immediately hear that section; to compare that with the closing of the third movement, just move the cursor to the Coda of the third movement and click to hear that section.

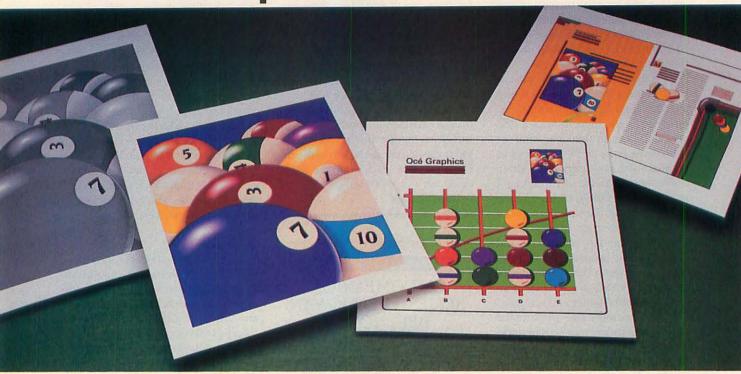
The next two levels, Beethoven's World and The Art of Listening, are longer sections that provide background about Beethoven's life and times as well as an explanation of the symphonic form in general and the Ninth Symphony in particular. Both essays are amply illustrated with graphics and audio examples from the CD (see "Learning By Doing"). Throughout, Winter's commentary strikes a delicate balance—it manages to be (continues)



### Learning By Doing

In The Art of Listening, you can learn about specific musical themes in the Ninth Symphony by following highlighted notes on the musical score. Playing the music from the Mac allows you to hear it in a simplified form. Playing it from the CD lets you hear it in its full symphonic beauty.

### The simplicity of a laser printer. The power of color.



Think of OcéColor as a color laser printer. A full palette of Pantone-certified colors in a machine as easy to use as your monochrome laser printer, ready to print accurate design comps and persuasive presentations on paper or overheads. The OcéColor printer uses true Adobe PostScript\* to assure compatibility with presentation graphics, desktop publishing, and graphic arts programs on Macintosh and PC systems. OcéColor gives you unsurpassed print quality, blazing speed, and a full one-year warranty. All this, combined in a machine that's truly desktop—smaller, lighter, and even quieter than your laser printer.

If you want to know more about how OcéColor can express your ideas more vividly and persuasively, call (800) 545-5445 and ask about





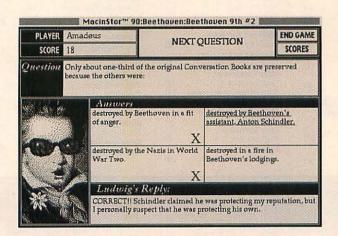
### Océ Graphics USA Inc.

385 Ravendale Drive P.O. Box 7169 Mountain View, CA 94039-7169 Phone: (800) 545-5445 (415) 964-7900 Formerly Schlumberger Graphics both academically comprehensive and intellectually involving. Surprisingly, it isn't boring.

The fourth level, A Close Reading, was my favorite. It provides simultaneous commentary on the symphony as it plays. On the left side of the screen, you can read about the music in a commentary box and see the number of the measure currently being played; to the right is a map of the symphony so that you can always see where you are within the larger structure of the work. Above the commentary box is the name of the movement you're in, along with Beethoven's musical markings for it (Allegro ma non troppo, un poco maestoso). By clicking on the movement number, you can move directly to the relevant section in The Art of Listening to read more about that movement; you're able to return to the same card in A Close Reading with one mouse click. And you can pause at any time to use the Notes section for your own notes.

Buttons occasionally appear, inviting you to hear something in isolation, such as a theme or variation. Clicking on these buttons brings up a card with the score for just those measures so that you can see them, hear them, and then return to the symphony when you are ready to move on. During the "Ode to Joy" choral section, the lyrics appear in either English or German. The most magical thing, though, is how easy it is to resume the symphony after a pause; there are none of the awkward gaps or skipped sections that I remember from the music lab at my university, where I would read a workbook and skip a needle all over a mistreated record.

Ludwig Incognito The Ninth Game lets you reinforce your knowledge by taking a quiz. Here Ludwig shows his delight with a correct answer by wearing his sunglasses and a boutonniere. He also adds more information about the answer.



### Recapitulation

The fifth level of the stack, The Ninth Game, is a funny, irreverent quiz. Designed for one to four players, the game makes it fun to answer questions about specific musical features of the symphony, factual questions about the score itself, and the life and times of Beethoven, as Beethoven's bemused portrait looks on. Correct answers are greeted with cries of "Sehr gut" and "Ach, du Liebe" that sound as if they come from Beethoven himself, while incorrect ones prompt shouts of dismay and sounds of breaking glass, along with helpful replies from Ludwig himself to help you learn from your mistakes. If you particularly please the master, he dons sunglasses and sports a flower on his lapel, or winks at you in a gleeful manner (see "Ludwig Incognito").

### Coda

If the combination of flexible interactivity, expert commentary, and definitive recordings of great music appeals to you, CD Companion is for you. The Voyager Company plans to release future volumes in the series and is currently working on Stravinsky's Rite of Spring. If using HyperCard to control an audio CD sounds like a tantalizing prospect, The Voyager Company also sells CD AudioStack, two stacks that provide you with all the tools you need to create your own companionable CD and stack programs. CD AudioStack even comes with its own audio CD, The Movies Go to the Opera, to practice on. Personally, I'm looking forward to an in-depth investigation of The Beatles' Abbey Road. - Liza Weiman

See Where to Buy or circle 713 on reader service card.

MIDI Sequencer

### MASTER TRACKS PRO 4

Pros: Clean screen layout; graphic song-overview window; support for 32 MIDI channels; full sync capabilities; flexible edit filters and quantize controls; full graphic display and editing of all data. Cons: No graphic display of note velocities; no snap-to-grid mode in graphic editing windows; no density control for pencil tool in controller editing windows. Company: Passport Designs. Requires: Mac

Plus; MIDI instrument. List price: \$495.

Passport's original Master Tracks Pro was very success-

ful because it was one of the first programs for the Mac to offer graphic editing capabilities and innovative windows that could display data such as tempo changes and pitch-bend movements in easy-to-understand graphic form. Even better, the program's layout was extremely clean, and it was simple to operate and learn. Over the years Passport has refined the editing displays and added many new features, but Master Tracks Pro 4 still has as simple a layout as the original Master Tracks product.

### Look-and-Feel

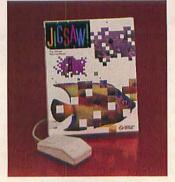
Because of their excellent visual design, earlier versions of Master Tracks Pro have long been popular among users who need a professional-level program but have little experience with computers. This simplicity is not achieved at the expense of power, however; Passport has endowed Pro 4 with high-end features like 32-MIDIchannel capability, sync to MIDI time code (MTC), and advanced tempo controls that greatly simplify composing music locked to video. With 64 multichannel tracks to record on and a built-in System Exclusive data librarian that can store patches from most synthesizers, Pro 4 should be able to satisfy the needs of all but the most demanding professionals.

Passport also includes one feature that no other Mac program has, a measure-by-measure graphic overview of the song being worked on. In Pro 4 it's in the main window, called the (continues)

### **PROGRAMS PLUS**



Now using a database can be a pleasure. Introduc-ing FILE FORCE, the easy straight forward data-base. Everything you need to build and use your filing system is built-in and in most cases automatic. FILE FORCE by Acius ..... \$255.00



Create a fascinating array of puzzle images that appeal to all ages. Four difficulty levels make it fun for all from 6 to 60. Import ability make the cossibilities and age. possibilities endless.

Jigsaw by Britannica Software . . . . \$24.00



A new internal modem for the Mac II series. Comes with software and a "Mac standard" serial port. Can be upgraded to include MNP error correction. A fax option is also available.

Datalink/Mac by Applied Engineering \$279.00

Utility Software	
1st Aid Software Complete Undelete	
Complete Undelete	37.
Abbott Systems	· Comme
CanOpener v1.1	64.
Affinity Microsystems	
Tempo II	75.
Aladdin Systems	46.
Shortcut	63.
ALSoft	UU.
Master Juggler or Disk Exp. II.	64
Berkeley System Design	
After Dark	24.
After Dark	49.
Caere Omnipage	539.
CE SOTTWATE	
QuicKeys or DiskTop v4.0	64.
MockPackage Plus Utilities	32. 32.
Calendar Maker	32.
Convil Mague 7	22.
Copy II Widt VY.Z	LL.
Copy II Mac v7.2	149.
Dayna Communications	1.10.
DosMounter	55.
Dubl-Click	
Calculator Construction Set v2.	45.
Fifth Generation Systems	
FastBack II or DiskLock	107.
Suitcase II	44.
Icom Simulations	95
On Cue	35.
MacPrint v1 2	95.
MacPrint v1.2	00.
Smart Alarms w / Appt	49.
Kent Marsh	1000
Kent Marsh NightWatch	86.
Loop Software	
PictureBook	39.
MainCtay	
Capture	49.
Mac Scheduale v2.U	149.
Microlytics	45.
GOIer v2.0	40.
Virex	52.
ON Technology	OL.
On Location	75.
Peter Norton	
Norton Utilities	73.
Software Innovations	-
	32.
HandOff II	52.

### **Now on Compuserve-GO PP Genie-GOPP**

SuperMac Software SuperSpool v5.0 or Diskfit v1.	5 58
SuperLaserSpool v2.02 or	00.
Sentinel v2.2	87.
Symantec	00
Symantec Utilities (SUM II). Symantec AntiVirus (SAM).	99.
Synex	00.
	79.
Mac Envelope v5	185.
WildFlower Software	20
SnapJot	32.
HyperMedia & Languages	
Control Colored Control Control Control	
Aladdin Systems Programmers Assistants	69.
Antic Software	00.
Hot Spot	42.
Apple Computer	40
HyperCard	42.
Turbo Pascal	68.
Digitalk	
Smalltalk / vmac	125.
Microsoft Quick Basic	65.
Millennium Software	00.
HyperX	. 65.
Silicon Beach	
SuperCard v1.5	189.
Prototyper	185.
SoftStream	
Authenticate w / Mutate	79.
HyperHIT v2.2	79. 125.
Somak Software	49.
Spinnaker Software	40.
Plus	115.
Symantec	100
Think C	168. 168.
Just Enough Pascal	52.
Symmetry	-
HyperDA	. 45.
TENpointO FocalPoint II	117.
The Result Software	1.17.
Dialoger	. 69.
Numbers & DataBa	ase
Management	-50
Acius	
FileForce SPECIAL 4th Dimension v2.0	255.
4th Dimension v2.0	469

Blyth Software

Solutions, International SmartScrap & The Clipper II. . 45. Super Glue II v2.01. . . . . 61.

Chang Laboratories	
C.A.T	225.
Claris	010
FileMaker II	219. 369.
Fox Software	300.
FoxBASE + Multi-User v2.0	399.
FoxBASE + v2.0	295.
FoxBASE + Multi-User v2.0 FoxBASE + v2.0 FoxBASE + Runtime v2.0	179.
Informix	
Wingz v1.1	249.
MICRO PLANNING MICRO PLANNER v6.1	225
Microsoft	335.
Microsoft Works v2 fl	185.
Microsoft Works v2.0	249.
Microsoft Office	529.
Udesta	
Double Helix III DataDesk Professional v3.0.	339.
DataDesk Professional v3.0.	349.
GeoQuery	198.
Paracomp Milo	150
D (   D     D	
DAtabase.  Satori Software  Bulk Mailer v3.3.  Bulk Mailer Plus.	. 68.
Satori Software	
Bulk Mailer v3.3	75.
Bulk Mailer Plus	179.
	245.
Synergy Valeide Creek	145.
KaleidaGraph	140.
Systat v5.0.	579
Fastat	165.
Word Processors	1.00
& Desktop Publishi	
District Control of the Control of t	ııy
Adobe	
ATM (Adobe Typeface Manage Adobe Type Set vol 1 or 2	59
ATM +	109
Adobe Illustrator w / ATM	279.
TrueForm Fill-Out	169
TrueForm Fill-Out	225. 229.
Newsletters or Streamline	229
PhotoShop	529
Advanced Software	00
DocuComp	. 88
A Lasting Impression ResumExpert Series (each).	. 39
Aldus Corporation	. 59
Color Extension	135
Color Extension	329
PageMaker v4	499
Altsys Corporation	
Fontographer v3.0	
	249
Antic Software	122
Flexforms 1 or 2	122
Antic Software Flexforms 1 or 2	. 46

Claris	
MacWrite II	159.
Computer Associates	100
Cricket Graph v1.31	125.
	469.
Design Science	400.
Math Type v2.11	95.
Emerald City	
Type Align	60.
Farallon Computing	
Screen Recorder	125. 159.
Letraset	100.
	619.
Design Studio	275.
Letra Studio or Image Studio	275.
Microsoft	
Word v4.0 or PowerPoint v2.1	249.
Word Maker	65.
Niles & Associates	00.
EndNote	75.
Olduvai Software	
	245.
Paragon Concepts	
Nisus v3	249.
Portfolio Systems DynoDex SPECIA	/ 05
Power IIn	L 83.
Calendar Creator.	. 38.
Address Book Plus	. 99.
Fast Forms v2.0	115.
Preferred Publishers	
Vantage or Exposure	52.
Prescience Expressionist v2.03	89.
Quark	00.
Duark XPress v3 D	479.
QuarkStyle. Shana Corporation	169.
Shana Corporation	200
informed Designer	185.
Spinnaker Software Top Honors.	. 59.
Springboard Publisher II.	109.
Symantec	View of
More II	269.
Symmetry	
Acta Advantage	64.
T / Maker WriteNow v2.2	119.
TimeWorks	110.
Publish-It! Easy	125.
Publish-Itl	225.
Word Perfect Corporation	000
Word Perfect v1.03	229.
Working Software QuickLetter	72.
QuickLetter	12.
AccuText	545.

### Spelling & Grammar Checkers

Deneba Software	
Spelling Coach Pro v3.1	125.
Big Thesaurus	64.
Electronic Arts	
Thunder! II	49.
Lexpertise	
Mac Proof	115.
Microlytics	
Word Finder	34.
Electronic Word Finder	59.
Reference Software	
Grammatik	51.
Sensible Software	
Sensible Grammar or BookEnds	51.
Accounting	
Aatrix Software	

Adtrix Surtware	nr.
Aatrix Checkwriter v2.0	35.
Check Mark	
MultiLedger	235.
Payroll	175.
Cash Ledger	115.
Computer Associates	
Simply Accounting	225.
Dinital Eta	
Business Sense	269.
Intuit	
Quicken v1.5	. 36.
Layered	
At Once! SPECIAL	285
Insight Expert INV or Payroll	395
Insight Expert INV, or Payroll. Insight Expert GL, AR, or AP.	395
MECA	uou.
Managing Your Money	124
	12.4.
Monogram Dollars & Sense v5.0	01
	01,
Nolo Press	20
WillMaker v3.0	32.
Reality Software	
Wealth Builder SPECIAL	165.
Satori Software	-
Componets GL	369.
Componets AR	369.
Survivor Software	

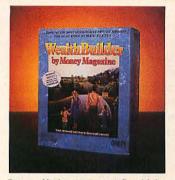
### Timeslips Timeslips III. . . . . . 169. Granhice &

arapinos a	
Design Software	
3G Graphics	
	-
Images w / Impact Graphics	51
Images w / Impact Business 1.	68
Abracadata	
D.Y.O.H. Architecture	58
Altsys Corporation	
Art Importer	89
Metamorphosis	145



FAX: 203/381-9043 Inquiries: 203/378-3662 75 RESEARCH DRIVE STRATFORD, CT 06497

### FEDERAL EXPRESS OV



Turn your Mac into your very own financial planner. Taking into account your financial profile. Wealthbuilder will recommend investments. Now for a limited time get Quicken free with Wealth-

Wealthbuilder by Reality Software . . \$165.00

Strata



atOnce! is the next generation in high-speed small business accounting. Included in one seamless inte-grated module are four full featured applications: General Ledger, Account Receivable w/Billing, Account Payable & Payroll. atOnce! by Layered . . . . . . . \$285.00

Dynodex, the software and paper system for personal organization, manages your names, addresses, phone numbers and prints concise double-sided address book pages that fits standard organizers. Includes a handsome binder.

Dynodex by Portfolio Systems ....\$95.00

Ashlar Voltum	689.
Vellum	009.
Hunor Animator	98.
Hyper Animator	249.
Broderhund	240.
Print Shon	36.
Print Shop	119.
Claris	1.00
MacPaint II	95.
Smartform Designer	295.
MacDraw II	295.
MacDraw II	595.
Custom Applications Freedom of Press	
Freedom of Press	259.
Danaba Software	
Ultra Paint	125.
Canvas v2.1	189.
Dubl-Click Software	40
World-Class Fonts	42.
WetPaint	. 42.
Studio 8 (MacII)	295.
Studio 8 (MacII)	96.
Emerald City	
Smart Art I, II or III	84.
Congrie Coffueres	
Generic CADD	64.
Generic CADD	CALL
Granhsoff	
Blueprint	339.
Blueprint	519.
Innovative Data Design MacDraft v1.2B	
MacDraft v1.2B	169.
Ureams	319.
I.S.I.	irr
Precision	155.
Kaetron Software	100
Top Down.	185.
LetraSet Font Studio	459.
MacroMind	400.
VideoWorks II	189.
MacroMind Director	439.
MathSoft	100.
MathCAD	305.
Metro ImageBase	000.
Call for Various Fonts	75.
Micro: Maps	
MacAtlas Paint v2.0	45.
MacAtlas Professional	105.
MacAtlas Presentation Pack.	105.
Micro Spot	
MacInteriors	195.
MacPlot Pen Plotter Pro	259.
MacPlot Pen Plotter Standard	133.
Paracomp Swivel 3D v1.1	200
Swivel 30 v1.1	299.
Model Shop	375.
Silicon Beach	125
Super Paint v2.0 Super 3D v2.0	125. 315.
Super SU VZ.U	010.

Strata	
Stratavision 3D	375.
Stratavision 3D	
MapMaker v4.U	289.
Studiotronics	
Colorset	229.
SuperMac Software	225
Pixel Paint v2.0	389.
Pixel Paint Pro	308.
Finek Works	119.
DeskWorks	225.
	LEU.
Educational/	
Creative Softwa	re
Broderbund	10000
Geometry, Calculus or Physics	. 59.
Carmen SanDiego World	. 27.
Carmen SanDiego Europe Carmen SanDiego USA	. 29.
Iam Cassions	29.
Jam Sessions	20.
Voyager v1.2	. 89
Coda	
Macdrums	. 31.
Perceive	. 49.
Perceive	559.
Electronic Arts	
Mavis Beacon Typing Deluxe Music Construction	32.
Deluxe Music Construction	. 84.
Deluxe Recorder	. 99.
Harmony Grid	50
Hook Un	89
Harmony Grid	
Interactive Physics	169.
Learning Company	
Reader Habbit	. 31.
Math Happit	. 31.
Meta Comet	E7
Accu-Weather Forecasters	. 57.
Nordic Educational Series: (each).	. 28.
PreSchool Pack	
Dollana Coftware	
Monsters & Make Believe.	. 29.
Dinosaur Days	. 29.
Penton Overseas	
VocabuLearn Spanish, French, German or Italian 1 or 2. VocabuLearn Japanese 1 or 2.	00
German or Italian for 2	29.
	35.
Disk Drives/	
Hard Disks/Keyboa	rds
1 Meg SIMMS	
Cambridge	
MacLite Z88 160K	785.
CMS	
MacStack SD20U	459.
MacStack SD30U	499.
MacStack 44MB Removable.	839.

Dayna Communications	
Daynafile DF0100 Single.	499.
Daynafile DF0102 Dual	695.
DataDesk	
Hyper Dialer	. 29.
MAC-101 or ADB Keyboard	136.
SwitchBoard	175.
SwitchBoard	CALL
Kennect Technology	CHLL
	100
Rapport	199.
Drive v2.4 w/ Fastback II.	329.
Key Tranic	
Mac Pro Keyboard w/Tempoll	119.
Peripheral Land	
Turbo AOMR Cartridge	109.
Turbo Floppy 1,44 Disk Drive	349.
Turbo Floppy 1.44 Disk Drive Infinity Turbo 40 MB.	1085.
Modems	
Abaton	000
InterFax 12 / 48	265.
InterFax 24 / 96	419.
Anchor Automation	
MacPac 2400E	169.
Applied Engineering	
DataLink Express	199.
DataLink Mac Portable	199.
DataLink Mac SPECIAL	279.
Haves Microcomputing	
Smartmodem 2400M	429.
Smartrom II v3 1	85.
Smartcom II v3.1 V9600 Baud Modem	759.
Practical Peripherals	
Practical Modem 2400SA	179.
MacCommoack	225.
MacCommpack	220.
Prodigy Modem Kit 2400	159.
Prometheus	100.
Prometneus	100
Promodem 2400M Ext	199.
Travel Modem	205.
Promodem 2400SE Int	209.
Promodem 2400MII Int	205.
Promodem 9600M Plus Ext Promodem 2400M Fax.	750.
Promodem 2400M Fax	209.
MAcKNOWLEDGE	139.
Shiva	
	425.
Supra Corporation	
Supra Corporation Supra Modem 2400	119.
Accessories	
Advanced Gravis	0.5
Mouse Stick (Plus or ADB).	85.
American Power Conversion	П
110SE UPS	269.
	200.
CalComp	
Wiz	149.
CalComp Wiz	149.
CalComp Wiz	149. 68.
CalComp Wiz	149. 68. 62.
CalComp Wiz. Ergatron MacTilt (Mac or II). Muzzle SE. Muzzle MacII.	149. 68.
CalComp Wiz. Frgotron MacTill (Mac or II). Muzzle SE. Muzzle MacII. I/O Design	149. 68. 62. 68.
CalComp Wiz. Ergatron MacTilt (Mac or II). Muzzle SE. Muzzle MacII.	149. 68. 62. 68.

Mac SE carrying case	/0
Kensington	
Apple Security Kit	33
Antiplese Polesizing Filter	22
Antigrate rolatizing ritter	0.4
Mac II Stand and Cable Kit	64
Printer Muffler 80	43
System Saver Mac	63
Super Base	33
Masternies Man II	105
Masterpiece Iviac II	100
New Jurbo Mouse	109
Super Base	135
A + Mouse	50
A + Widuse	08
A + ADB Mouse	. /9
Practical Solutions	
Mouse Master	57
Cordina Maura	00
Cordless Mouse	33
Networking	
Beagle Bros.	
Flash	129
DataViz	
Markink Blue / Translator	nn
MacLink Plus / Translator MacLink Plus with Cable	99
MacLink Plus with Cable	119
Farrallon	
Farrallon Timbuktu	95
TrafficWatch or Timbuktu Remo	10
trafficwatch of filliouxto nellio	tor
Portable Pack	125
Portable Pack	329
Freesoft	
White Knight v.11.04	85
	UU
Infosphere	
Liaison	1/5
Insigna	
SoftPC v1.3	245
Microcom Software	
	***
Carbon Copy (Twin Pack)	119
Carbon Copy (Twin Pack)	179
Microsoft	
	0.4
Mail Mac Work Station	04
	249
Nuvotech	
Nuvol ink SC	319
Nuvotech NuvoLink SC	1250
luruu Star	1999
OUR POLICY	
VISA and MASTERCARD accepted.	Norm
- VISA and MASI Encand accepted.	HD ST

Prodigy Service Company	
Prodigy Start-up Kit	. 27.
Shiva	070
Net Serial X232	279.
Net Bridge or TeleBridge	339.
Solutions International	
Fax Gate Plus	239.
Synergy Software	
VersaTerm	88.
VersaTerm-Pro	174.
Traveling Software	
LAP-LINK Mac Connectivity.	114.
LAP-LINK Network Pac v3.0.	185.
TOPS	***
Tops Repeater or Flashbox.	119.
Tops FlashCard	155.
Tops Network Bundle v3.0.	189.
InBox / Mac Administrator	215.
Printers, Digitize	rs
& Monitors	
Aapps	- 3
Micro TV (MacII)	265.
Complete PC	
Complete Half Page Scanner.	309.
Complete Full Page Scanner.	759.
Digital Vision	
Computer Eyes-Mac	199.
Computer Eyes-MacII Color.	349.
GDT Softworks	
Print-Link Collection	59.
JetLink Express	89.
Koala Technologies	(2002)
MacVision v3.0 (Digitizer)	269.
Kurta	
IS ADB Tablet 12 x 12	359.
Magnavox	
	529.
Seikosha Control Control	200
SP1000 Imagewriter Comp.	229.
Thunder Ware	Diam's
ThunderScan Plus ThunderWorl	<b>(S</b>

- VISA and MASTERCARD accepted. No surcharge, four credit card is not charged until we ship.

  If we ship a partial order shipment that completes is sent free.
  All shipments insured; no additional charge.
  Upon receipt and approval, personal and company checks now clear the same day for immediate shipment.
  No sales tax except orders shipped within CL add 8% tax.
  COO maximum \$1000, cash or certified check. COD orders ship via UPS Blue Label unless UPS Ground delivers next day.
  120 day limited warrarty on all products.
  Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. Prices subject to availability.
- For purchase orders, corporate purchases, call our business office at 203-378-1926, 9am-5-30pm EST. Purchase orders accepted at our discretion. Shipping on corporate orders billed at cost.

or Lightning Scan 400. . CALL

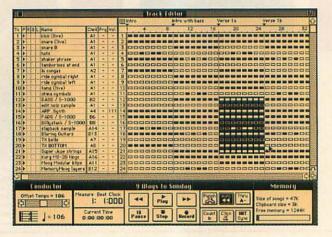
### SHIPPING

- SHPPING
  Continental U.S.; Add \$3.00 per order to cover Federal Express Standard Overnight Service, unless UPS ground delivers next day. Some areas require an additional day.
  All (instock items) ordered by 7:00pm Eastern Time Mendy shu Fridaw will ship that evening for evernight delivery, barring computer failures or other calastrophes.
  Alaska, Hawaii, outside Continental U.S., APO and FPO: call (203) 378-3862 or write for shipping information.
  Mail-in orders (especially from foreign countries), please furnish telephone or fax number.



FAX: 203/381-9043 Inquiries: 203/378-3662 75 RESEARCH DRIVE STRAIFORD CT 06497

Right on Track
Master Tracks Pro 4's
main window, the
Track Editor. The grid
on the right of the
window shows
what's going on in
each track, displaying
measure numbers
and markers across
the top. The transport
controls at the bottom operate just like
those on a tape
recorder.



Track Editor (see "Right on Track"). Each box on the grid represents one measure of music; a solid box indicates that there is data at that measure in the track, a hollow box indicates an empty measure. As you build up more and more tracks, this display provides invaluable visual feedback about the song under construction. You can quickly insert markers at any point in a sequence to delineate sections. The Track Editor window scrolls while the sequence plays back, keeping the currently playing measure at the left edge of the window. You do most of your editing with the mouse by dragging to select edit regions and clicking to set paste or insert points. If you hear a bum note that needs fixing, a quick double-click anywhere in the grid opens the Step Editor for that track, precisely at the measure you clicked on.

### **Step In for Editing**

The Step Editor is where most tweaking of single notes takes place. You can stretch, move, erase, and insert notes with the mouse, and zoom the display to any of six views. Doubleclicking on a note pops up a box showing the note's start time, pitch, MIDI channel, attack and release velocity, and duration, all of which can be edited numerically. Non-real-time, or step, recording can be done from this window as well, allowing you to use live MIDI input to place notes on screen. You make region-specific edits in the Step Editor in much the same manner as in the Track Editor window, using the mouse to select the data in question, but in the Step Editor the regions can be as small as

1/240 beat. In the Track Editor, in comparison, the regions always snap to measure boundaries, making selecting large regions much quicker. Unfortunately, in the Step Editor you can't set the cursor to snap to any grid when selecting regions, so selecting rhythmically precise regions is trickier than it needs to be.

Two other features make Master Tracks Pro 4 stand out: the Fit Time, which very elegantly creates the tempo changes necessary to make a selected region of measures fit a specified number of minutes or seconds; and the Change Filter, which allows you to specify what notes will be affected by editing commands chosen from the Change menu. Other programs have similar filters, but none of them allow you to specify a map of beats within the measure that will be affected, or allow you to select every *x* measure.

### In Control

Master Tracks Pro 4 also offers graphic display of MIDI Continuous Controller data. Pro 4 displays movements of the pitch-bend wheel, changes in keyboard pressure (aftertouch), programchange commands, and any of the 128 MIDI controllers as plots of data value against time. A slow fade on a synthesizer's volume pedal looks like a ramp on the screen, and if it's not perfect, you can easily redraw it with the pencil and eraser tools. For users of synthesizers and effects devices that can map incoming MIDI controllers to sound parameters, Pro 4 provides an excellent environment for automation control. You can even edit tempos in this fashion, which makes creating complex tempo changes a breeze. Like

both the Track Editor and the Step Editor, these editing windows can scroll during playback and can zoom in to any of six magnifications.

One drawback to using the pencil to draw controller data, however, is that Pro 4 enters one controller event for each screen pixel you draw across. If you zoom way in to draw a precise curve, you wind up entering lots of data, which hogs memory and clogs up the MIDI data stream. Although there is a menu command that thins out controller data within a region, you have to thin out the data each time you draw it.

### **Filling the Bill**

Passport has really made Pro 4 a complete workspace by including niceties like a notepad that stores text information inside a file, and a song playlist that cues up strings of separate files to create a set for live playback. Passport has added a List Editing window, which is very efficient for some operations. There is also a facility for remote control of play, record, rewind, and so on, buttons from keys on a MIDI keyboard.

Many companies have refined graphic editing even further than Passport, however, leaving Pro 4 a little shy on features. Opcode's Vision, for example, can show the attack velocity of each note in graphic form and has sophisticated cursor controls that make editing individual notes much quicker (see *Reviews, Macworld,* October 1989). And Mark of the Unicom's Performer can show five or more different types of MIDI controller data in one window, as opposed to Pro 4's one-per-window display.

This slight feature gap is offset by the fact that both competing programs are much more confusing and harder to learn. Pro 4's interface is far smoother and cleaner than either competitor's, and Pro 4's Track Editor makes cutting and pasting sections of songs easier than on any other program. With 95 percent of the capabilities of the competition, and a simple design that makes everyday operations less confusing, Pro 4 stands out as the one professional-level sequencer that you don't have to be a rocket scientist to use.—**Charles Clouser** 

See Where to Buy or circle 785 on reader service card.

## The Industry's First One-Year Guarantee

### Times have changed, and so have hard drives.

What are the frontiers in hard drive storage? No-hassle reliability, engineer support, custom formatting and partitioning software, A/UX 2 support, and Macintosh IIfx compatibility.

INTRODUCING: The MacDisk II. 300MB of 18ms muscle and love.

In the fast-paced mass storage industry, it takes a lot of experience and know-how to stay on the leading edge of technology. We at Priam have been pioneers in our field since the introduction of our first generation 14-inch hard drive in 1978.

### We offer the industry's first one-year money-back guarantee.

We are so confident you will find our highquality drives to be the best available that we back them with

> our unprecedented one-year guarantee. If you don't like your drive, you can return it to us and receive your money back, no questions asked.

Our drives also come with a full two-year warranty. Should

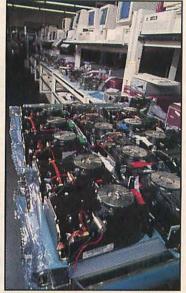
your drive ever need service, we will repair or replace it at your option. We can even swap it with a new one within 24 hours.

### You receive customized formatting and partitioning software.

Money Back Guarantee

Our user-friendly software, written by long-time hard drive specialist Don Burtis, provides formatting, interleave setting, true partitioning, resizing of partitions without initializing, password protection, extensive diagnostics and more.

As a special feature, the software allows unusual partitioning flexibility, allowing spanning of drives with partitions—a partition may span over more than one drive—as well as multiple partitions per drive.



Unlike most drive vendors, we manufacture our drives ourselves.

Our software also includes Cursor-Guide<sup>TM</sup>, our exclusive on-screen help facility, and strategy screens that tell you what order to perform various functions.

### When you ask for support, you don't get a clerk, you get an engineer.

Our specialists provide the kind of service you can get only from a company that makes their own drives.

You need to know the difference between a box-stuffer and a manufacturer. A box-stuffer cannot repair your drive because they did not manufacture it themselves.

But at Priam, we make our own drive mechanisms. That's the difference. And

because we are manufacturers, we carry a full inventory of parts in our San Jose factory.

Our drives are designed to meet the performance demands of the new Macintosh IIfx and software such as A/UX 2 and Aldus Pagemaker 4.0.



The Priam 300MB MacDisk II

The fast 18ms seek time, large 300MB capacity and proven dependability of the Priam 300MB MacDisk II make it well-suited to the increasing complexity of the applications of today and tomorrow.

Call us at 1-800-726-8872 for more information and the name of your nearest Priam dealer.



© 1990 Priam Corporation. MacDisk and MacDisk II are registered trademarks of Priam Corporation.

All other brand or product names are trademarks or registered trademarks of their respective manufacturers.



### DATA DESK 3.0

**Pros**: Superior implementation of exploratory data analysis; rich graphics set; HyperViews; new linear modeling section extends professional capabilities.

Cons: Lacks tests found in other high-end Mac statistics packages. Company: Odesta Corporation. Requires: Mac Plus; second disk drive. List price: \$595.

The competition between Data Desk and other Mac statistics programs has a curious history. Data Desk started as a single-minded proponent of exploratory data analysis (EDA); it expected the user to graph all data in several different styles and use plots as the basis of most analysis. The other programs, by contrast, were mostly tablebased products designed to receive numbers from a spreadsheet and grind that data through different kinds of textbook analysis. Through the years newer Mac statistics offerings have included more EDA features, while Data Desk has stayed well ahead of the pack in exploratory graphics and has added more traditional statistics as well. Version 3.0, the newest release, offers innovative use of color as a plot variable and a complete General Linear Model unit, carefully integrated with the rest of the program.

### The Data Desk Way

The essence of exploratory data analysis is to plot data points in several different ways by using different grouping points for classification. In the business example provided with Data

Desk, plots show businesses grouped by industry category or profitability category, plotted against gross sales. Since Data Desk makes it so easy to explore data, you might ultimately find that different industries fall into distinct plotting zones on a scatterplot of log (sales) versus log (assets), a useful insight into business structure (see "A Capitalist Plot").

Once you have found an interesting relationship by examining a variety of plots, you can perform numerical tests for statistical significance. Besides highlighting relationships for further investigation, graphical methods also allow the investigator to note and edit outliers or other anomalies in the data.

### **Vital Statistics**

Data Desk has always included standard summary statistics, regression analysis, correlation statistics for non-parametric analysis, and principal components analysis. Data Desk allows unlimited variables and variable values, stored in the program's own relational structure, and a huge library of menubased transformations. A feature called HyperViews gives context-based suggestions to pursue on appropriate lines of analysis.

Data Desk now includes a linear modeling section for analysis of variance and covariance (n-way ANOVA and ANCOVA) that accommodates most experimental designs, including unbalanced designs and designs with missing cells. The modeling section is especially useful because it accepts sets of data points selected and cut from Data Desk with the lasso tool—this makes ANOVA an efficient follow-up to insights developed during graphics

manipulation. As an aid to beginners, linear modeling is performed from a Design Window that steers you through the initial model setup.

Other new features are sliders and the use of color as a plotting variable (rather than mere chart decoration). You can point to a plot axis, select it, and slide it, changing the plot origin. You can also define slider controls for any type of graph and use slider values in a computation.

Color as a variable is a simple but powerful concept; you can, for example, display a profit-versus-loss plot for a collection of businesses using variable blueness for degrees of profit and redness for loss. For really information-packed plots, color can be used as a fourth variable on a three-axis rotating plot. There's one more important graphics enhancement—Data Desk now offers scatterplot matrices. Plots can also now be presented in sequence through link buttons, and each window can include a note panel for comments.

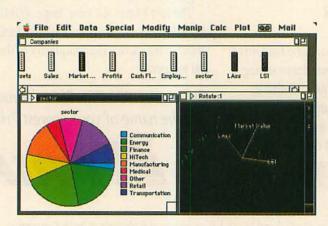
### **Real-World Conclusions**

If you need a statistics program that includes the whole list of tests from the handbooks, you should pick Systat instead. If you need to make presentation graphics from data sets, Abacus Concepts' StatView II is better, and if your main concern is performing ANOVA on well-defined experiments, the top choice is Abacus Concepts' SuperANOVA (see *Reviews, Macworld,* May 1990). If you're a student you'll find that Data Desk 3.0 is not specifically keyed to mainstream college texts, unless you're lucky enough to be working with Student Data Desk.

But Data Desk does something that no other statistics program does as well. Specifically, it lets nonprofessionals investigate and find the same relationships in data that a professional statistician would find. That's a large claim, but it's a fact that Data Desk lets you perform a better analysis, with less formal background, than does any other Mac statistics product. For the vast range of possible users who are neither professional analysts nor analysts-in-training, Data Desk 3.0 offers the shortest path from numbers to real-world conclusions.—**Charles Seiter** 

See Where to Buy or circle 720 on reader service card.

A Capitalist Plot
Data Desk encourages you to investigate data through
plots first and traditional tabular analysis
second. This figure
shows businesses
color-coded by
industry category, one
of Data Desk's many
applications of color
in data analysis.



### IF YOU LIKE WHAT THE MACINTOSH DID FOR PERSONAL COMPUTING



Now we have 3 easy-to-learn, easy-to-use accounting programs created especially for the Macintosh

### MULTI LEDGER "

An Integrated accounting program which combines General Ledger, Accounts Payable, Accounts Receivable, and Inventory tracking. Generates checks, customer invoices, customer statements, and a wide variety of financial and management reports. Prints on ImageWriters, LaserWriters, and many other printers.

### PAYROLL

A complete payroll system for organizations with 1 to 1000 employees. Use it as a stand-alone program or integrate it with either of our ledger programs. Calculates both employee and employer taxes and deductions. All state and federal tax tables and parameters are included and all can be modified by the user!

### CASH LEDGER

An "entry-level" General Ledger program for those who don't need payables, receivables, or inventory tracking. Shares many of the same G/L features and advantages of MultiLedger, including check-writing, bank reconcillation, and financial reports. Upgradable to MultiLedger if more features are needed in the future.

COMMENTS FROM RECENT REVIEWS

"My favorite all-around accounting program is CheckMark Software's MultiLedger/Payroll set. It was the simplest and most logical I examined that provided a reasonably full set of capabilities. Its price/performance ratio represents an excellent bargain."

Macworld / September 1988

"MultiLedger is ideal for the small business. It's easy to set up and use and has an amazing set of accounting features when compared to other programs that cost more and don't offer much more power."

MACazine / March 1989

"I don't know of any other Mac accounting software which contains so many features and modules for the price."

Computers in Accounting / January 1989

"A welcome and impressive bonus is the Payroll program which can be linked to MultiLedger.... MultiLedger and Payroll are a bargain for companies that don't need a networked system."

MacUser / April 1989

Our favorite package was MultiLedger.... it's the most elegant, usable and Mac-like of all the packages we reviewed.... CheckMark offers unlimited free telephone support to all users. This policy would lead to bankruptcy if the program were as confusing as others."

The Macintosh Buyer's Guide / Spring 1989

### ...You'll love What we did for SMALL-BUSINESS ACCOUNTING

Easy. Powerful. If you thought they didn't go together, consider what the Macintosh did to redefine personal computing.

It let users concentrate on what they were trying to achieve or produce, while other systems forced them to focus on the operation of the computer itself. The amazing success of the Macintosh shows that when thinking people are given a choice between simplicity and power, they'll take both!

Those who created the Macintosh realized that it takes more time, more work, and more creative thinking to make something simple than it does to make something complicated. Their success has enabled us to create easy-to-use, affordable accounting programs for small and medium-sized businesses of all kinds.

To see if one or more of our programs can work for you, just give us a call. We'll send you a free demo disk of all three programs, reprints of recent reviews, and dealer names in your area.

You'll see for yourself just how easy and painless accounting on the Macintosh has become.



1520 East Mulberry / Suite 200 Ft/ Collins, Colorado 80524 Phone 303-484-3541 FAX 303-484-042

Full-functioning demo disk available

1-800-444-9922

MacIntosh, ImageWriter, and LeserWriter are tradentaries of Apple Computer, Inc. MultiLedger is a trademark of CheckMark Software, Inc. Database Publishing Utility for Page Maker

### DATASHAPER 1.0

Pros: Quickly automates extensive formatting of data; thorough documentation; wide variety of format templates. Cons: Creating original format file may involve trial and error. Company: BenWare. Requires: Mac 512KE; 1MB RAM; hard disk; Aldus Page-Maker 3.0. List price: \$149.95.



Database publishing has always been the black hole of desktop publishing on the

Macintosh. Despite the abundance of jazzed-up, feature-laden desktop publishing programs, formatting database or spreadsheet files in page-layout programs has always been cumbersome.

Considering the time, energy, and patience desktop publishers spend on formatting individual fields from tabdelimited files, it is a wonder that Aldus, Quark, and Letraset have never addressed the issue of database publishing. Conventional front-end typesetting systems have had this capability for quite some time.

### Repetitive Redundancy

When you've placed a tab-delimited text file in PageMaker, formatting is tedious and time consuming if you want different type specifications for each field in the file. Electronic style sheets for formatting in PageMaker and other page-layout programs apply to either lines or paragraphs-there is no way to automate the process of selecting Field 1 and formatting it one way, selecting Field 2 and formatting it another way, and so on.

A good illustration is the 4-field, tab-delimited FileMaker text file that we use to produce the Where to Buy section here at Macworld. To get from

701 (tab) Product (tab) Great Product Inc., (tab) 415/555-5555 to here:

701 Product Great Product Inc., 415/555-5555 always took hours.

In addition, the work was mentally and physically repetitive, making it doubly tedious. Imagine having to format individual database fields and add punctuation over and over again to hundreds of entries.

### The Tab's Delimit

DataShaper imports and formats unformatted text-only, tab-delimited files from a variety of spreadsheet and database programs. The program works best with database and spreadsheet applications that use the standard Mac character set. DataShaper is compatible with Ashton-Tate's dBase Mac. Microsoft Excel, Microsoft File, Claris's FileMaker II, ACIUS's 4th Dimension, FoxBase+/Mac, and most programs that save tab-delimited text-only files. It worked successfully with all the programs mentioned. Files that use commas rather than tabs to delineate fields need to be converted to tab-delimited files (use the search-and-replace capabilities in most word processors).

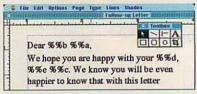
After installing DataShaper, you open PageMaker, where you create placeholders (a pair of percent signs followed by a lower-case letter, for example, %%a) to correspond to every field in the data file. DataShaper then formats, rearranges, and reorders each placeholder complete with punctuation, spacing, tabs, and alignment. Next, DataShaper creates a format file by exporting the placeholder file using the filter in the Export menu.

Once the format file has been created, you select the file using the Place option in PageMaker's File menu. Another dialog box appears, in which you select the unformatted data file. PageMaker then automatically formats the text.

Because each field is identified as %%a, %%b, %%c, and so on, you must be familiar with the contents of each field in the data file. Creating my first format file involved some trial and error as I learned how to identify placeholders as categories.

The only bug I found in Data-Shaper could be dangerous, although not fatal. While documentation is otherwise meticulous and well-organized, it refers to two distinctly different files as format files. One is the placeholder file where the user specs the %%a field, %%b field, and so on; and the other format file is the file created when the Export function is used from the placeholder file. While checking for bugs, I named the file I was creating with the Export function the same name as the placeholder file that was currently open. The program alerted me that I

_	Al	Lest ne	me		
Q.H	monute	B	Links caraind yan	l p	T
10	Last name	First name	Product bought	Color	Texture
2	the State of			100	
8	Johnson	Martha	Scruff the Dog	Brown	Estra-Soft
4	Barton	Arrie:	Pounce the Cat	White	Soft
5	McLeod	Andrew	Fluff the Rabbit	Pirk	Soft
6	Kim	Leslie	Scruff the Dog	Black	Estra-Soft
7	77.141	2000	The second second	1	100000000000000000000000000000000000000





Hard Sell for Soft Toys

Using a Microsoft Excel file of catalog orders (top screen) you can automatically create a personalized follow-up letter (bottom) once a placeholder file has been set up (middle) and a format file created.

could not copy over that file and had "failed to export." I then tried to create a format file with a different name but got the error message "Failed to export. No room in local heap." This was the only problem I encountered in my extensive use of DataShaper.

It takes time to learn to format correctly, but DataShaper ultimately saves time and is an absolute necessity if you deal with tab-delimited database or spreadsheet files. In one test, a file that took four hours to format in PageMaker without DataShaper now appeared exactly as it should (formatted and specced) after a 30-second filter pass with DataShaper.

### **Support Galore**

With two software tutorials, nine software templates (ranging from a mail merge model to tape-cassette and VHS labels), and documentation that includes troubleshooting and advanced techniques, DataShaper is a small but incredibly useful product for desktop publishers. Automating redundant formatting tasks should have been one of the first things desktop publishing on the Mac could do for us. Fortunately, despite one fly in the ointment, DataShaper is a balm for many a tired desktop publisher's hands.-Luis Camus

See Where to Buy or circle 721 on reader service card.

### **Macintosh Training That Works**

"I have been using FileMaker for about a year now and decided to get the MacAcademy tape to see how the program was presented, the content, and to see if other tapes would be useful. After looking at the tape I promptly ordered three more! Needless to say I was pleased, as the tapes are professionally done and most useful. You and your company do a fine job." Mr. James H. Patterson, M.D.

DAYTONA BEACH, FL-"There's got to be a faster, easier, and less expensive way!" This statement sums up the frustration that Randy Smith felt three years ago as he tried to find training for the Macintosh computer.

That frustration led to the creation of MacAcademy, now the nation's leading Macintosh training program, and the recent introduction of the country's first complete Macintosh Video Training Series. MacAcademy teaches over 18,000 people each year in 65 major metro areas. The program is proud of the fact that both beginning and advanced Macintosh users, from over 12,000 companies large and small, have found MacAcademy's live workshops to be an excellent, low priced training solution.

In order to offer additional training, MacAcademy's next step was to put each of their dynamic training workshops on video. (And to offer an additional dozen training videos for programs not even offered at MacAcademy.)

Now you may choose from over 26 different, 2-hour, VHS MacAcademy Videos for only \$49 each. A complete list of programs can be found in the coupon below.

MacAcademy Video Training tapes offer tremendous advantages for today's Macintosh user. When using the videos you actually see the steps take place on a Macintosh screen. A small inset will show you the instructor and the mouse or keyboard. The instructors featured on the videos are MacAcademy's top rated teachers who have trained employees of all but two of the USA's Fortune 500 companies and who have each received a consistent rating of excellent.

Training videos offer the valuable advantage of building a learning and reference library. If you ever want to brush up on a technique, simply go back to the video and review the technique demonstrated. If you hire a new employee, simply have them review the video for the program they'll be using. Videos offer the unique flexibility of teaching both individuals or hundreds of people at one sitting.

In addition to a super \$49 price, the videos also carry a 30-day satisfaction guarantee. If you're not totally satisfied, simply send the tape back for a full refund.

MacAcademy will continue offering the nation's highest rated live training courses in major cities. But in addition, you may also build your Macintosh training library.

Videos may be ordered by phone with credit card information, or by mail with check, credit card, or purchase order. You may also send orders by FAX. Your business is appreciated and your satisfaction is guaranteed.



The MacAcademy Video Library features over 26 Macintosh training tapes. Each two hour VHS video tape captures the unique and effective teaching and learning techniques of MacAcademy's top instructors.

**acacemy** Video Training Series

Videos Only \$49 E	Cach (Check desired tapes)
Beginning Mac (#1) Beginning Mac (#2) Advanced Mac Beginning Adobe III. Intermediate Adobe III. Super Paint Beginning PageMaker Intermediate PageMaker Advanced PageMaker Beginning Excel 2.2 Intermediate Excel 2.2 Beginning FileMaker II	Advanced FileMaker II Beginning Word 4.0 Advanced Word 4.0 Beginning QuarkXPress Intermediate QuarkXPress Advanced QuarkXPress Dollars and Sense Works: Integration Works: Word Processing Works: Data Base Works: Spread Sheet HyperCard Basics Mac Networking Techniques
Number of Videos:	Number x \$49.00: \$
	Per Video Shipping: \$
NAME	Florida Residents Add 6%: \$
COMPANY	Total: \$

\_\_\_\_\_CARD EXP. DATE \_\_\_\_\_ ©1990 Florida Marketing International, Inc.

TELEPHONE

SIGNATURE

CREDIT CARD NO.

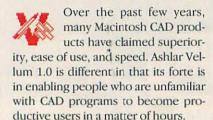
### 2-D CADD Package

### **ASHLAR VELLUM 1.0**

Pros: Simple user interface; good documentation; full-featured tool set.

Cons: Lacks floating tool palette; requires a lot of memory. Company: Ashlar.

Requires: Mac II; 4MB RAM; System 6.0.2; hard disk. List price: \$995.



### **The Basic Features**

Vellum 1.0 has a small and simple tool palette and well-organized menus. The Selection Mask dialog box allows you to quickly and easily select only certain objects, colors, or layers. Unfortunately the tool palette does not move from its position on the left side of the drawing window, which results in extensive mouse mileage for anyone who uses a large-screen monitor. Similar tools are grouped together under one tool icon on the palette; for example, you can draw a circle by selecting either center, radius, diameter, three points, or two tangent lines from under the circle tool.

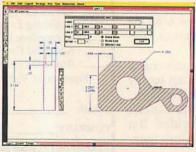
Vellum's basic engineering functions include calculations of perimeter, area, centroid, and moments of inertia of any selected object. Vellum also includes trimming, and another tool that lets you choose between filleting and chamfering by selecting from pop-up icons (most CAD packages require that you select each individual line when filleting or chamfering; Vellum, on the other hand, allows you to select a corner by holding down the Shift key and clicking the pointer near the corner you need filleted or chamfered).

No CAD package is complete without special duplication commands like linear and polar duplication, and Vellum offers easy special duplication commands through a floating dialog box. Vellum also gives you a floating dialog box for editing geometric objects. You can change an object's shape, color, or location by simply keying in the new parameters.

In addition to using the menu or keyboard commands to execute functions such as zooming and construction-line drawing, Vellum also offers some unique commands. For example, to zoom in on a particular area, you hold down the # key and drag diagonally across the area of interest. This fills the screen with a new view defined by the diagonal line you traced on the screen. Vellum's construction lines are temporary dotted lines you create by holding down the # key and dragging the cursor. They enable you to establish endpoints and intersections relative to the rest of the geometry of your drawing and, unlike lines created using the tool palette's line tool, construction lines can be easily erased.

A floating palette with tools for horizontal, vertical, oblique, perpendicular, and angular dimensioning is available. Vellum calculates these dimensions and places them as a geometric entity on your drawing. However, because you do not have control over where Vellum places the geometric entity, you must drag it to a place where it does not interfere with other geometric objects or dimensions. Most CAD programs allow you to specify placement without having to go through this extra step.

A floating dialog box is used for placement of geometric dimensioning and tolerancing, for example, concentricity, perpendicularity, flatness, total runout, parallelism, and positional and



Dimensioning

Vellum shows the coordinates at the bottom of the screen as well as the user response at the upper left of the drawing window. Geometric tolerancing is done through the floating dialog box, where you type numerical values and datums. Each of the pop-up boxes gives you a choice of symbols.

material conditions, which are based on ANSI Y14.5.

Complementing Vellum's superior dimensioning capabilities is its integrated parametric-design feature, which lets you enter variables for dimensions that can be redrawn to give you the actual shape of an object. For example, a rectangle can be expressed as a value, with the adjacent side defined as a value of the first. You can then take this feature a step further: While setting the dimensions of an object, you can define the value of the object as something other than the actual value of the geometry. When all dimensions have been specified, Vellum draws the object to the specifications outlined by the dimensioning.

Vellum has an unusual feature, called the Drafting Assistant, that lets you see your cursor trailed by an endpoint, midpoint, intersection, center, or tangent. This attribute can save you considerable time, since it eliminates the need for constant trips to the menu to select different point snaps.

### Strikes and Fumbles

Although Vellum performed with no problems, I was disappointed at the memory and storage requirements for this 2-D package. I used a Mac IIx with 8MB of memory and the program on a Pinnacle Micro erasable optical disc. When you run the Vellum installer, the program checks to make sure that your machine has 4MB of memory.

A DXF translator is built into Vellum; however, it did a sloppy job of translating different AutoCAD Release 10 DXF files. Layers, vertical dimensions, and text notes did not transfer properly. The tool palette should float so that you don't have to mouse across the screen to get to it.

At \$995, it's hard for Vellum to compete with Claris CAD, IDD's Dreams, or Diehl Graphsoft's Blueprint—especially if you do not need built-in parametric design or geometric tolerancing. If and when Vellum uses less memory and disk space, and is less expensive, it may give Claris and other high-end CAD vendors a real run for their money. I am looking forward to the future release of Ashlar's 3-D package to complement Vellum.

-Victor Elgohary

See Where to Buy or circle 710 on reader service card.

## The only thing stopping you now is your imagination.

Just imagine a hard drive for the Macintosh line of computers that lets you spend less time waiting and more time creating. A drive that maximizes your computer capabilities and makes fast work of database management, desktop publishing and computer-aided design. A drive that can connect your network in a flash, and be very reliable. It's not a dream. Rodime Systems' Cobra Series offers access times as low as 14.5 milliseconds and storage as high as 650MB. And up to 48K of look-ahead caching to take advantage of the high performance of these drives. Cobra internal drives range from 45MB to 210MB while our external Cobra drives go from 45MB to 650MB. So, you

can work with a long list of advanced software applications.

If you can imagine it, Rodime Systems Cobra Series can help you achieve it. Call us today at 407-994-5585. We'll put your imagination to work.

Circle 149 on reader service card



## JMP to a Higher Level of Discovery

### With JMP Software for Statistical Visualization

Make a quantum leap in data analysis with JMP software for your Apple Macintosh\*. JMP combines traditional statistics with today's most innovative graphics.

### Discover more.

▲ Fit regression and Analysis of Variance models, but see them in a new way with leverage plots, showing how each point contributes to each hypothesis test.

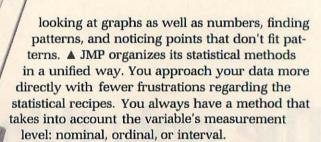
▲ Fit means, but see the significance of their differences visually with comparison circles. ▲ Analyze high-dimensional data and extract principal components, but see both the points and variables in the same graph with a biplot, one that spins in 3D. ▲ Examine a correlation matrix, but see more with a matrix of scatterplots with density ellipses. See high-dimensional outlyingness of points with Mahalanobis distance plots. ▲ See your data always displayed in a familiar spreadsheet grid.

### Interact more.

▲ Point and Click to view, edit, or manipulate your data...to get an analysis...to identify points...to customize...to get context-sensitive help...to choose colors and marker symbols for your points in every graph. ▲ Point and Click on a calculator panel to make formulas for variables. ▲ Point and Click on your data in one graph, and the corresponding points will be highlighted in all the other graphs instantly. ▲ Click and Drag to change the intervals for histograms instantly...to spin your 3D graph smoothly in real time...to resize any graph. Cut and Paste your data within JMP or to other applications. ▲ Cut and Paste reports to other applications or journal them to a file.

### Understand more.

▲ JMP is simple to use, so you can spend your time studying your data, not your software. ▲ JMP presents statistical results visually, so you are always

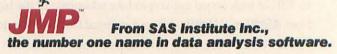


Macintosh II

MacWEEK says "JMP is powerful and easy to use. The programmers' delight in writing JMP is evident throughout and makes the program intuitive and a pleasure to use."

### A Free Video Preview

For a free video preview of JMP, call our JMP Sales Department at (919) 677-8000. In Canada, call (416) 443-9811. Or, write us at the address below.



SAS Institute Inc. □ JMP Sales Dept. Box 8000 □ SAS Circle □ Cary, NC 27512-8000 Phone (919) 677-8000 □ Fax (919) 677-8123

To use JMP, you need an Apple Macintosh with 1+ meg. 2 meg recommended.

JMP is a trademark of SAS Institute Inc., Cary, NC, USA.

Apple and Macintosh are registered trademarks of Apple Computer, Inc.

Copyright © 1990 by SAS Institute Inc. Printed in the USA.



### RECORDHOLDER-PLUS 3.1

Pros: Excellent online help; table-ofcontents window; helpful input pattern and verification features. Cons: Limited telephone support. Company: Software Discoveries. Requires: Mac 512K. List price: \$99.95

RecordHolderPlus version 3.1 is the latest upgrade of a fine database-management program that has been around for years. Although 3.1 costs about twice as much as the original version, it is still proof that well-written, competent programs need not cost as much as a major appliance.

### **Multiwindowed Interface**

RecordHolderPlus makes fine use of the Macintosh interface. In the data entry mode, three windows appear on screen: Display, What to Find, and Table of Contents (see "RecordHolder-Plus Data-Entry Mode"). The scrollable and resizable display window is where records appear one at a time and where you enter and change data. The What to Find window is where you enter search terms and Boolean operators to call up specific records. You can even hunt for partial matches in any text field. This feature, combined with the program's capacity-a file can be as large as 16MB if you have a hard disk, and a record or field can be as large as 32K-makes RecordHolder-Plus very practical for storing text-intensive records.

The Table of Contents window displays a list of the fields you have chosen to index the records in a database. This unique feature of Record-HolderPlus not only gives you an easy way to view the records in a file but also provides a way to access them. With the Table of Contents window active, you can scroll until the record you want appears, or you can type in the first few characters and the program moves to the section of the list you want. Clicking on an entry brings the appropriate record into the Display window and makes that window active. New to version 3.1 is an autoscroll feature, which automatically adjusts the Table of Contents window to show the record that is in the Display window.

### **Data-Entry Shortcuts**

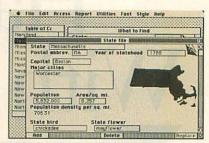
RecordHolderPlus makes data entry especially easy by offering a variety of input options. For instance, you can tell the program to convert the first letter of each word or all characters in a particular field to uppercase, a veritable godsend for those of us who never learned to use the Shift key properly. Input patterns take the awkwardness out of entering values like telephone numbers by automatically putting in parentheses, hyphens, or any other constant characters that you specify.

RecordHolderPlus supports a wide variety of field types. In addition to the standard text, number, money, and date fields, you can have check boxes and radio buttons; table lookup fields with a limited number of entry options; and pictures. You can also designate computed fields using field names and arithmetic operators or complex numeric and text functions.

You can customize the data entry form-that is, the way the record appears in the Display window-by dragging each field to where you want it on the screen. You format report layouts in much the same way. Record-HolderPlus's flexible report mode now supports footers and up to four levels of subheads, and subtotals along with the heads and totals that have always been available. The import feature is also quite flexible, allowing you to import text files with various types of delimiters and with fields that correspond to only some of the fields in your database. For example, you can use an imported text file of names and phone numbers from some other application to get your database started and fill in other fields manually.

### **Incremental Changes**

The changes that have been made to RecordHolderPlus are incremental, little niceties to make a good program even better-but it's still completely compatible with previous versions. RecordHolderPlus 3.1 also has password protection, which lets you prevent unauthorized people from chang-



RecordHolderPlus Data-Entry Mode The Display window, which shows the current record, can be resized. The dog-ear in the upperright corner of the window lets you flip backward or forward through the file.

ing a file structure, updating records, or opening a file. The program now lets you avoid printing duplicate records and detects and skips duplicate records when you import a file. RecordHolder was never impossibly slow, but the new version is peppier.

Like all good programs, Record-HolderPlus comes with a tutorial designed to introduce the new user to the program's basic features. Unlike many programs, it has an outstanding online help feature. Under the Help menu you have a choice of contextsensitive help or an index that leads you quickly to any part of the extensive online documentation.

### Few Quibbles

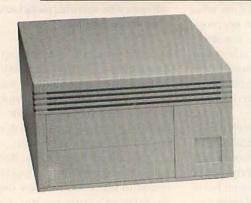
Any complaints I've ever had with the program have been minor. For instance, nowhere in the manual does it say that in a group of radio-button fields one button must always be on. Perhaps the program's biggest shortcoming is its limited telephone support—only three hours a day, five days a week. Given the comprehensiveness of the manual and the quality of the online help, however, chances are that you will never need any additional assistance.

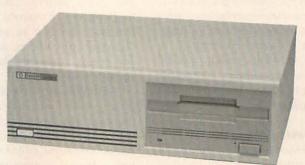
Don't be fooled by product marketing claims, or the lack of them. Although RecordHolderPlus is inexpensive enough for people whose needs don't justify spending \$250 or more for one of the big-name database programs, it is sophisticated and powerful enough for small and medium-size businesses that don't require a relational or networked database, and it is easy enough for anyone to learn how to use.—Gerry Lukos

See Where to Buy or circle 798 on reader service card.

## Hard Drives With a Difference

### PROTECTED BY FIVE-YEAR WARRANTY





330MB \$2800 660MB \$3475

### Good news, bad news

First the good news: When it comes to performance and reliability, Hewlett-Packard disk drives are unmatched. And now, they're available for your Macintosh system, complete with software, cabling and a five-year warranty.

The bad news? With formatted capacities of 330 and 660 Mbytes, they're not for everyone.

### A fresh perspective

At Cranel, we don't sell 20 Mbyte drives. We sell drives with capacities up to 1 Gigabyte. Drives that have proven themselves in the most demanding applications, including engineering and graphics. Drives that help unlock the potential of your Macintosh system. You expect a lot from your Mac and we turn your expectations into reality.

### **System Specifications**

Dimensions	5.75" h. x 13" w. x 9.25" d.
Transfer rate (async SCSI)	1.5 Mbytes/s
Track-to-track seek time	3.5 ms
Average seek time	16.5 ms
Maximum seek time	32 ms

### See us about optical, too

As an authorized Hewlett-Packard representative, we can also meet your need for rewritable optical disk drives. With a capacity of 650 Mbytes per disk, an average access time of 107 ms, and a sustained read transfer rate of 680 Kbytes per second, optical drives provide economical online storage or backup.

### We make it easy to do business

At Cranel, we know how to do business with businesses – both large and small.

Our toll-free number puts you in touch with a knowledgeable sales representative who can give you more information on the hard drive with such an oustanding record of performance it carries the longest warranty in the industry.

800-288-3475



"The Peripheral People"

510F East Wilson Bridge Road Worthington, OH 43085-2373 (614) 433-0045 Fax: (614) 433-0073 100 Otis St., Suite 7 Northborough, MA 01532-2415 (508) 393-2880 Fax: (508) 393-5054

<sup>\*</sup>Five-year warranty applies only to hard drives. Optical drives are covered by one-year warranty.

### Personal Finance Software

### ANDREW TOBIAS MANAGING YOUR MONEY 3.0

Pros: Excellent for financial planning and investment tracking; tax tables updated annually; new technical-support phone system. Cons: Check-writing management not as convenient as dedicated check-writing software. Company: MECA Ventures. Requires: Mac Plus; second disk drive. List price: \$219.98.



Managing Your Money 3.0 has the same general look-andfeel as the previous versions.

The main (or Home) screen still allows you to write checks; spend, receive, and transfer money; record and handle investments; plan for insurance and retirement; estimate your current year's taxes; and schedule reminders and write yourself notes. Managing Your Money's (MYM) Help icon is still in the lower-left corner, the Exit icon at the lower right, and the Quote-of-the-Day light bulb icon is still next to Help, ready to give you a wise (and usually humorous) quotation on a click's notice.

The top menu bar still duplicates many of the palette icons, although it has been altered somewhat. Net Worth has been removed, and its selections have been integrated into the Money menu. The Reports menu items, unlike many others, are window-sensitive, so selections' availability depends on the window you're using.

### What's New?

Much of what's new in version 3.0 are incremental improvements. You can now record transactions with the Enter key rather than by using the mouse. Some menu commands are different "to make the program more intuitive for nonfinancial folks," according to MECA. The latest tax laws have been incorporated (for estimating taxes), and an IRA Decision Analysis menu selection has been added. MECA updates its tax tables nearly annually—a feature usually available only in a dedicated tax program.

There are, however, a few morenoticeable improvements, the most significant of which is MYM's increased printing capabilities. Printing accuracy for the LaserWriter IISC and ImageWriters with sheet feeders has been improved, and MECA has added support for the Hewlett-Packard DeskWriter.

An obvious improvement is MECA's customer support. The company has installed a new technical-support phone system (similar to WordPerfect's), which I tested and found to be excellent. Since MYM offers unlimited free telephone support, this is definitely an important plus.

### MYM's Strength

Managing Your Money's greatest strength is its noncheckbook financial functions. While checkbook programs, such as MacMoney or Dollars and Sense, allow you to track investments and perform insurance and tax functions, these functions are done as checkbook manipulations or add-on windows. MYM treats all those distinct financial functions as dedicated activities, thus making the work easier and more efficient.

In addition to features found in the high-end check writers like projecting savings yields and loan costs, MYM offers powerful financial functions that can help you analyze the tax benefits of an IRA account, analyze bond yields and investments, and make mortgage refinancing decisions. MYM also has a dedicated menu to track your stock investments.

Another strong point is the excellent calendar-management segment that makes it easy for you to schedule daily activities and reminds you of important events.



MYM's Insurance & Retirement Planning
MYM provides several dedicated forms for
financial planning and decision making. This is the
form used for planning insurance and retirement.
Comprehensive, dedicated forms like this are not
found in personal check-writing programs like
MacMoney, Dollars and Sense, and Quicken.

### MYM's Weakness

Unfortunately, MYM's basic check-writing segment is not as quick and convenient as most dedicated checkbook programs. It's not that MYM's basic spending money, receiving money, and transferring money screens are poor; they're not. Writing a check or making a deposit in MYM is fairly simple. The check appears at the top of the screen, and an entry form for assigning the cost to a category is on the bottom. To write a check you click on the source account, fill in the amount, and type the name and address of the payee onto the check portion of the screen. Then move to the bottom of the screen and click on the category you want to charge. The program fills in the amount and the check is ready for printing.

To charge to two or more categories (\$50 to a credit card account and \$3 to an interest-paid account, for example), you keep clicking in the category window until the total equals the amount of the check. To see the categories to which the check amount is charged, you click on a Recap button and the amounts paid to each category appear in a pop-up window.

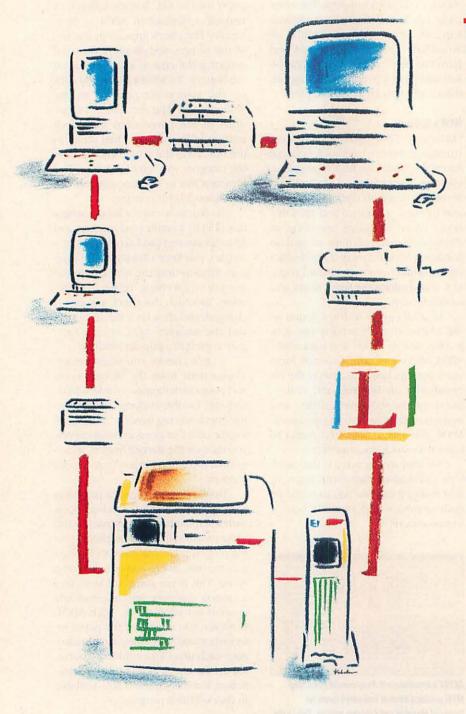
To edit checks, you select Review Transactions from the Money menu and your entries appear in a scrollable window. Double-clicking takes you to the check-writing window. After editing the check or category assignments, you click on the Record button, which returns you to the Review Transactions window.

Dedicated check-writing programs allow you to work on your checkbook with a scrollable check register in the same window. In addition, check-writing programs like MacMoney offer you a Name box, where you can click on a name. The payee name, address, and a default category are automatically entered on your check. With MYM, however, you must type the payee information and select the payment category each time. You could, of course, set up the check as a recurring transaction, but this option is also available in check-writing programs.

### **The Bottom Line**

If you just want a check-writing program, stick with the high-end programs (continues)

### PUT YOUR COMPANY'S IMAGE ON THE LINE.



he line is a networked Linotype publishing system. And many companies have learned that our experience in high-quality PostScript® publishing makes it the line to follow when you want a high-quality image.

For example, our Linotronic\* imagesetters were the first, and for years the only, high-resolution PostScript output devices.

Our PostScript typefaces (more than 650 and growing) are the most widely used in the world. In fact, the resident fonts in all Adobe Post-Script printers are licensed from us.

And since 1986 we've installed hundreds of Macintosh based electronic prepress systems, enabling you to produce complete pages (like this four-color ad) right at your desk.

All this is supported by a worldwide team of experts on every aspect of electronic prepress, from training to network configuration.

Put it all together and you get the assurance of knowing that our top-quality products are part of a proven publishing solution.

Isn't that really the bottom line?

Call Linotype at 1-800-633-1900. In Canada, call 416-567-7111.

This ad was entirely produced on a Linotype Publishing System.

Linotype



©1990 Linotype

\*Linotype and Linotronic are trademarks of Linotype AG and/or its subsidiaries.

Apple, the Apple logo and Macintosh are registered trademarks of Apple Computer, Inc.

PostScript is a registered trademark of Adobe Systems Incorporated.

Circle 205 on reader service card

SETTING THE STANDARD

like MacMoney or Dollars and Sense, or the simple but still fairly powerful Quicken. However, if you are serious about managing your personal finances and willing to invest the effort of setting up the program and a little extra time to maintain your information, you'll benefit greatly from Managing Your Money. If you really want to plan for your retirement, meet your insurance needs, plan for your children's education, and manage your investment portfolio, I don't think you'll find any personal financial management software that will do a better job of guiding and assisting you. - Alan L. Slay

See Where to Buy or circle 707 on reader service card.



### Math Education Game

### MATH BLASTER MYSTERY

Pros: Educational and fun; teaches more-advanced concepts than most math games; uses color; 30-day money-back guarantee. Cons: Students may lose interest in some activities. Company: Davidson & Associates. Requires: Mac Plus. List price: \$49.95.



Math Blaster Mystery isn't just another arithmetic drill-and-practice program; it's a collection of math activities designed to help preteens develop logical thinking skills and learn strategies for solving problems. These activities use color graphics, simple animation, and clever games to make the learning process fun.

The opening picture menu offers four activity choices: Follow the Steps,



Search for the Clues

Each picture in Math Blaster Mystery reveals another clue to narrow the search for the mystery number. When a guess doesn't match all of the clues, the program highlights the discrepancy and waits for another guess.

Weigh the Evidence, Decipher the Code, and Search for the Clues. Each activity can be adjusted to any of four different skill levels.

### Step by Step

Follow the Steps looks at first glance like a multiple-choice practice drill. The program displays a word problem like this Level 4 example: "Erin flipped a coin ten times. It came up heads six times and tails the other four times. What is the probability that it will come up heads the next time she flips the coin?"

Instead of asking immediately for the solution, Follow the Steps guides the student through the problem-solving process with this series of prompts: "What does the problem ask you to find?" "What information is needed to solve the problem?" "Select the correct expression." "Select the correct solution." For each of these intermediate steps, the program displays four possible answers; by choosing correctly, the student progresses to the next prompt, until the final solution is reached.

A menu provides students with instant access to a variety of formulas and definitions that may be helpful in solving the problems. Twenty-five problems are provided for each of four skill levels, and Math Blaster Mystery includes an easy-to-use editor for adding additional word problem data files.

### **Playing the Numbers**

The next two activities do look like games; in fact, they're based on traditional, nonelectronic games. Weigh the Evidence is a graphic variation on the classic Towers of Hanoi puzzle. There are three scales. Four labeled weights appear on one scale's balance pan; three of the weights must be moved to one of the other two pans to match the target weight. The student must first figure out which three of the weights add up to the target value and then move them, one at a time, without ever placing a heavier weight on a lighter one. Depending on the skill level, the weights can contain a combination of positive numbers, negative numbers, decimals, percentages, or fractions.

Decipher the Code is like a mathematical version of hangman or Mastermind. The screen contains a series of blank boxes; the student must guess what numbers and arithmetic operators go in those boxes. For example, the solution to an eight-box level 4 puzzle might be  $5 + 31 = 4 \times 9$ .

### **Digital Detective**

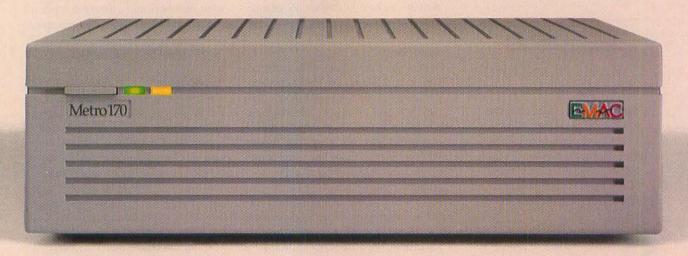
The last game, Search for the Clues, is the most original and entertaining of the bunch. For each puzzle, the screen is crowded with colorful pictures reminiscent of a pulp mystery: a cat on a couch, a maid with a feather duster, and the like. A click on any of these animated pictures might reveal a clue for solving a number mystery, such as n < 25 or n is odd or n is a factor of 39. The student reads the clue, guesses a number, and returns to the picture screen to select another clue, repeating the process until the correct number is guessed (see "Search for the Clues").

Throughout all four activities, the program awards points based on logical responses. Students can print out certificates showing point totals and ranks (Computation Cadet, Digital Detective, Chief Problem Solver, and so on). Points and ranks provide motivation for many kids, and they're used in the program's automated record-keeping option.

As a parent and a teacher, I'm impressed with Math Blaster Mystery. It's a thoughtfully designed tool for helping kids to develop a variety of prealgebra skills and concepts. My under-12 software testers approve, too, but for a different reason. They like Math Blaster Mystery because it's fun.— George Beekman and friends

See Where to Buy or circle 786 on reader service card.

## It's like owning a disk drive with a bulletproof vest.



### Introducing the Metro with SCSI Sentry

EMAC has found a way to prevent unnecessary Macintosh hard drive fatalities with SCSI Sentry,™



an engineering breakthrough in disk drive reliability. It protects your disk drive from damaging shorts that can trap data inside your hard disk. Which makes any drive with the SCSI Sentry

substantially more reliable.

And only EMAC Metro drives have it.

Metros are zero-footprint disk drives — so they fit perfectly under a Mac Plus or SE. You can also stand Metro on its side next to any Mac II, keeping your desk free for papers, phones, or photographs.

But Metro's engineering goes far beyond pure aesthetics. With some of the most stringent testing in the market — and mean-time-between-failures ratings of 50,000 to 70,000 hours — these drives were built to keep you up and running. And, if your Metro drive ever does have problems, our modular design makes diagnosis and repair quick and easy.

When you add the SCSI Sentry to such reliable disk drives, you know your data's safe with Metro. If you want to own a disk drive with a bulletproof vest, call EMAC at 1-800-821-0806, extension 2222. It's just one more way that EMAC gives you more for your Mac.

More for your Mac

EMAC, the EMAC logo, Metro, SCSI Sentry, and "More for your Mac" are trademarks of Everex Systems, Inc.
Other based names and product names are trademarks or registered trademarks of their respective companies.
EMAC, a delinion of Everex Systems, Inc., 44831 Milmond Drive, Trennent, CA 94331.

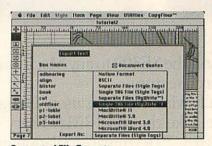
### Import-Export Extension for QuarkXPress

### COPYFLOW 2.0

Pros: Simple, straightforward design; adds XvWrite file support to QuarkXPress. Cons: Not a full-featured document manager; depends on Quark's somewhat erratic import-export filters; copy protected. Company: North Atlantic Publishing Systems. Requires: Mac SE; 2MB RAM; hard disk: QuarkXPress 2.12. List price: \$395.

Until North Atlantic Publishing Systems released Copy-Flow last year, there was only one way to get text and illustrations into and out of desktop-publishing documents: story by story, picture by picture. Not only was this tedious and boring, it caused intolerable delays. Users of QuarkXPress and CopyFlow, an extension or add-on to Quark-XPress, can now import or export files, saving precious time over the course of a publication's production cycle. Quark dubs these add-ons X-Tensions, and they are actually strings of program code that modify QuarkXPress. As with other XTensions, after you've placed CopyFlow in QuarkXPress's folder and launched the program, the add-on modifies QuarkXPress.

You can specify which folders to import from and which to export to. Most typically, these folders are on a network server and are accessible by a workgroup composed of writers, editors, and artists. As soon as new or modified files are ready, you can quickly import them into the QuarkXPress document.



Supported File Formats CopyFlow uses all formats supported by QuarkXPress. It also adds support for XyWrite and North Atlantic's own style tags. All selected hoxes from a document can be combined into a single file for easy editing.

CopyFlow creates a new menu and adds a configuration option under the Utilities menu.

### **Boxes Filled Like Magic**

To use CopyFlow, you first open a QuarkXPress document, and using the CopyFlow menu, select the folders that will be used for importing and exporting files. After you've created your page layout, you then assign a name to a single text box, series of linked boxes, or any graphics box. The name of the destination box must match the name of the file to be imported—that's how CopyFlow knows where to send each story or illustration (it can import any graphics file normally accepted by QuarkXPress). When you've named the boxes, CopyFlow lets you import all or selected files. This looks almost like magic, as box after box fills itself before your eyes. You can use the batch export command to send all or selected stories or graphics to the export folder, where they can be edited and then reimported.

CopyFlow has some nice touches. For example, you can use it to get around QuarkXPress's annoying lack of master pages by assigning the same name to more than one box. If a box name isn't unique, CopyFlow places the specified text or picture file throughout the document in every box with that name. If you replace a graphics file, CopyFlow retains any scaling and positioning adjustment you've made to the picture.

CopyFlow can import or export every file format supported by QuarkXPress (these are available in the XTensions supplied with QuarkXPress). In addition, CopyFlow supports XyWrite, an MS-DOS word processor (see "Supported File Formats").

CopyFlow can combine every exported file into a single large tagged file, for convenient one-pass editing. When the file is reimported, text is placed in the appropriate boxes.

### Tags for Text: One Works, the Other Doesn't

CopyFlow uses two different text-style tag formats: Quark's Extended Style Tags 2.12 (which didn't ship with the QuarkXPress 2.12 upgrade but is available from CompuServe and other online services) and North Atlantic's own style tag format. Of the two style tag

formats, North Atlantic's is far superior. If you apply a significant amount of OuarkXPress-specific formatting to text-such as tracking, kerning, or fractional font sizes-you must use one of the style tag formats; otherwise, QuarkXPress's special text formatting information tends to get lost when stories are exported, and some of QuarkXPress's word-processor import filters don't work terribly well, anyway. Although similar to Quark's Extended Style Tags, North Atlantic's style tags are more compact and accurate. Stories that I exported and reimported using Quark's Extended Style Tags often contained erratic formatting changes, while North Atlantic's were consistent and predictable.

North Atlantic's tags, however, don't recognize any local overrides of style sheet formatting. For example, if you took a paragraph with a style sheet that called for 13-point leading, and changed that paragraph's leading to 15 points, that information would be lost if you exported and then imported the story using North Atlantic's tags. You must create a new style sheet every time you create a new paragraph format, even if you use that format only on a single paragraph in your document.

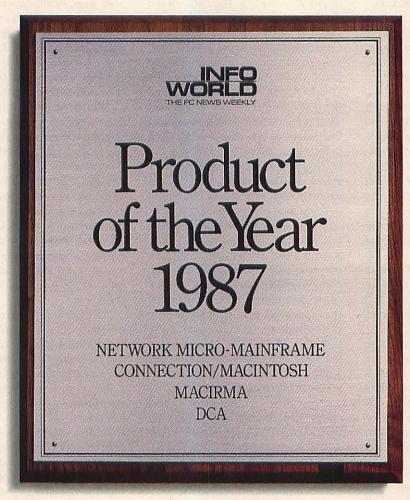
CopyFlow uses a copy-protection scheme: once you launch it with QuarkXPress, it can be used only with that particular copy of the program; if you subsequently drag CopyFlow into a folder with a different copy of QuarkXPress, the XTension won't function. Upgrades to QuarkXPress shouldn't disable CopyFlow, since QuarkXPress's upgrades don't change the program's serial number. North Atlantic will upgrade CopyFlow to work with the upcoming QuarkXPress 3.0, and CopyFlow will be available for \$30 to registered users.

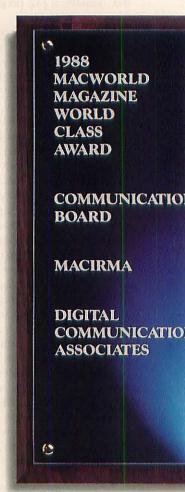
### **A Publishing Lifesaver**

I found CopyFlow easy to learn and use, and quick. Even if you're a single user, and not part of a workgroup that's always under the gun to make deadlines, CopyFlow is worth considering simply because of the way it relieves you of the boring task of importing and exporting files one by one.—Eric Taub

See Where to Buy or circle 719 on reader service card.

### Providing You With Mainframe Solut Unexpected Side Eff





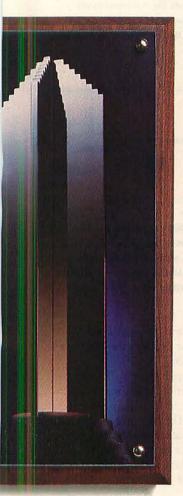
Once a year, Macintosh™ users are asked to name the best Mac-to-mainframe product. And for the past three years, the name they chose was MacIRMA.™ This has made us very happy.

But then, DCA® has been making a lot of Macintosh users happy by continuing to expand the MacIRMA product family to include 3270 coax adapters for all kinds of Macintoshes,

from the SE™and the SE30™to any Macintosh with NuBus™architecture.

What really wins over Mac users though, is our software. Like the MacIRMA Entry Emulator for 3278/79 terminal emulation in a CUT environment. And the newly announced MacIRMA WorkStation software which supports both DFT coax and IRMALAN™

### The Most Mac-Toions Has Had An ect: Plaque Build-Up.





Gateway connections to the mainframe.

If that's not enough, there is MacIRMA Graphics software which provides mainframe graphics terminal emulation. And there's also MacIRMA API, so you can write your own programs in "C" or Hypercard to connect to the host. Best of all, every software product supports file transfer and runs on any of our boards.

You might even say we're obsessed with offering more choices in Mac-to-mainframe technology than anyone else: We've certainly got the hang-ups to prove it. For more details, please give us a call at 1-800-241-4762, ext. 57.



Start a file on us today. You'll need it tomorrow.

SE30 and NuBus are trademarks of Apple Computer, Inc. ©1990 Digital Communications Associates, Inc. All rights reserved.



### Drawing and Mapping Program

### AZIMUTH 1.0

Pros: Produces maps with a nearly infinite range of viewpoints; object-oriented drawing tools make customizing maps easy.

Cons: Poor documentation; slow; keydisk copy protection. Company: Graphsoft.

Requires: Mac Plus. List price: \$395.

Graphsoft's Azimuth is an object-oriented drawing-andmapping program for those who want to create illustrations using maps of states or provinces, countries, and continents. It works best on a top-of-the-line Macintosh with a fast microprocessor, but it will run on a Mac Plus and enable you to produce almost infinite variations of a map. You can create a two-dimensional outline map centered on any point by entering the appropriate latitude and longitude, or you can make the land mass appear as if it were being viewed from a satellite orbiting the planet or from the space shuttle coming in for a landing.

Unfortunately, this program, which incorporates CAD as well as regular drawing features, is flawed by documentation that appears still to be in the draft stage. Be prepared for some frustration because basic steps are missing from the instructions. To make matters even worse, the manual lists no technical support telephone number. Even when I did manage to phone Graphsoft, no one could answer my questions. Finally, I reached a programmer who spent over an hour walking me through the fundamentals of creating a map. When the secrets of using Azimuth were unlocked, however, it revealed itself to be a clever program.

### Tailoring a Map

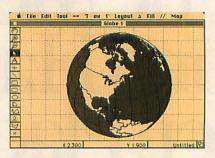
Azimuth comes on 6 disks and gives you 12 menus (not counting the Apple menu), plus a full complement of tools (see "Azimuth Window"). You manipulate the data file for a given map by setting different combinations of view angle (or *aim*), azimuth, distance, and scale, replotting after each try.

According to my dictionary, an azimuth is "an arc of the horizon measured between a fixed point and the vertical circle passing through the center of an object." It is a difficult concept to grasp and perhaps even more difficult to envision, given the multiple variables you have to work with. I had the most satisfactory results plotting the horizon before plotting a map.

When the principal map appears on the screen at precisely the view, angle, and scale that you want, you are ready to add surrounding states or countries one by one (see "Michigan Map"). An accompanying application called CombineData, which is not documented in the manual, lets you group several maps into one file. By using this feature, you can add surrounding maps all at once, thus saving some steps and maybe a little time. Even so, the more complicated the map, the longer the plotting takes. While plotting the Eurasian land mass on a map of the globe, Azimuth tied up my Mac Plus for 30 minutes. State and country maps are faster to complete than whole continents, but each time you change the aim you must do another "initial" plot. So until you have the knack of choosing the combination of settings that will produce the map you have in mind, you're liable to spend a lot of time replotting.

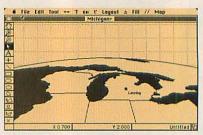
You can use Azimuth's drawing tools, including plain and filled shapes and a freehand line tool, to customize your cartographic creations. A locus tool lets you affix markers or symbols to your maps to designate cities and other features. You have to eyeball the placement of symbols, however, because although Azimuth displays the cursor's on-screen coordinates, it does not let you place a locus using latitude and longitude coordinates. It also lacks an on-screen ruler.

Azimuth lets you compose sets of maps in layers, as if you were working on sheets of clear tracing film. An element that is common to all maps, such as a frame, can be made visible to all layers while individual maps can be designated as visible only when the layer containing them is active. The program offers three options for saving finished maps: a floating-point format that retains the coordinate system; a lower-accuracy PICT format that can be opened in other Macintosh



### Azimuth Window

In order to fit all 12 menus on the menu har, some of them are in code. The == menu lets you manipulate the layers of a map. Under the 'T, ex, and t' you'll find the Text Style, Text Size, and Font menus



### Michigan Map

This map of Michigan was replotted until the desired view was achieved. Then Canada, Ohio, Illinois, Indiana, and Wisconsin were added one at a time. The text label for Lansing is an object that can be moved, but the star is "glued" to the Michigan map.

programs; and a scaled PICT format intended for use with the MacPlots II printer driver.

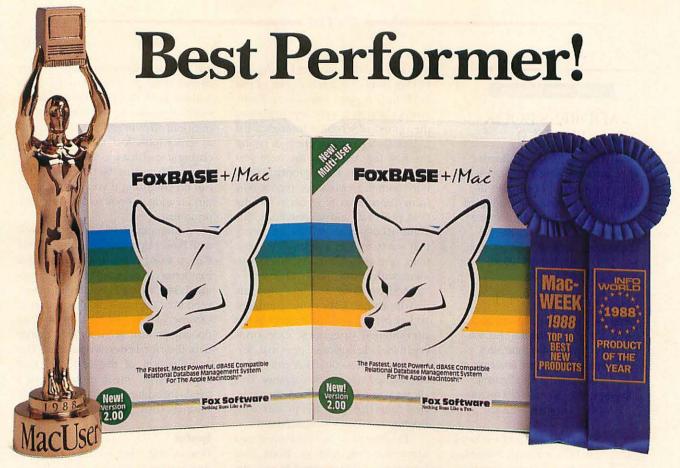
One graphic designer I spoke with exports Azimuth maps into MacDraw II; another moves them into Aldus FreeHand. They are both enthusiastic about Azimuth, however, because, as one designer put it, the program does what no other software can do on an off-the-shelf Mac. Significantly, perhaps, both got one-on-one lessons and did not learn the program from the manual.

### **Getting Lost in Azimuth**

The manual is Azimuth's biggest short-coming. It is filled with dense paragraphs, but it fails to explain simple aspects of the product. If you need to produce maps of varying sizes and views to illustrate publications, Azimuth will do it for you. Be prepared, however, to learn by doing.

### —Gerry Lukos

See Where to Buy or circle 711 on reader service card.



### FoxBASE+/Mac: The Most Celebrated Mac DBMS Now Includes a Powerful Report Writer!

New FoxBASE+/
Mac Version 2.00 is
here—and stealing the show!
In its first year, FoxBASE+/Mac
won more awards—both in the U.S.
and Europe—than any other DBMS ever
created for the Macintosh! And Version 2.00 is
faster and more powerful than ever—packed
with innovative new features and language
enhancements!

### New FoxReport!

FoxReport lets you create virtually any columnar or free-form report—without any programming! FoxReport includes:

- Page Layout: Designate many layout settings for your report: number of columns, left margin setting, column width, space between columns, measurement size for each page, and more!
- Report Layout Window: Define the different areas within your report, using Fox-Report's new "band" system. Start with the default bands: Page Header, Body, and Page

Footer, then bring in other bands like Title, Summary, Column Headers and Footers, etc.

- Object Menu: Control the Type Font, Sizes and Styles of text objects. Fill and Pen options let you change the color and shading of almost every object!
- Page Preview: "What-You-See-Is-What-You-Get" design ensures that the report on your screen is exactly as it will appear in print!
- Label Generator: Create labels of almost any size and configuration. You can even include pictures *anywhere* on the label space!

### New Features!

- Enhanced XCMD/XFCN Support: Load up to 16 external XCMD's and XFCN's, then access them directly from within Fox-BASE+/Mac 2.00 programs!
- Language Enhancements: Other features include: support for custom hierarchical menus, new commands to help handle resources, new system functions to improve filename and screen management, and much more!

### Perfect Connectivity!

FoxBASE+/Mac 2.00's Multi-User version allows complete data and application sharing between networked Macs and PCs! (when used with FoxBASE+/LAN). It also runs on the most popular network systems: AppleShare, Novell and 3Com! . . . And It's Faster Than Ever!

### Order or Upgrade Now!

FoxBASE+/Mac Version 2.00 is the *new* Leader of the Mac! And at only \$495 (\$695 for Multi-User), it's a phenomenal bargain! If you're already a FoxBASE+/Mac registered user, you can upgrade to Version 2.00 for just \$75!

To order your copy (or ask for a *FREE* demo disk), call (419) 874-0162. Or visit your local quality software dealer.

After all, when it comes to the Macintosh, Nothing Runs Like a Fox!

FoxBASE, FoxBASE+/Mac, and FoxReport are trademarks of Fox Software. Macintosh is a trademark of Apple Computer, Inc.

### Fox Software

Fox Software, Inc. 134 W. South Boundary Perrysburg, OH 43551 (419) 874-0162, Ext. 650 Fax: (419) 874-8678 Telex: 6503040827 Fox



Address-Book Managers

### ADDRESS BOOK PLUS 1.0

Pros: Prints address books, Rolodex cards, envelopes, and labels; paper sizes are customizable; includes dialer DA.

Cons: Doesn't print two sides; DA opens slowly. Company: Power Up Software.

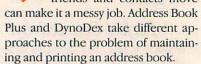
Requires: Mac Plus. Hard disk recommended. List price: Basic package \$89.95; with binder \$129.95.

### DYNODEX 1.1

Pros: Prints two-sided address books; good user interface; flexible selection facility. Cons: Limited paper sizes; no DA version; doesn't print envelopes or labels. Company: Portfolio Systems. Requires: Mac Plus. Hard disk recommended. List price: \$199.95.



Maintaining an address book can be a real pain. Scribbled names and phone numbers, misfiled entries, and the inevitable rubouts as your friends and contacts move



### **Address Book Plus**

Power Up offers Address Book Plus in two packages with identical software. The basic package includes pin-feed six-ring paper to use in a loose-leaf binder; the Pocket Address Book package comes with a leather binder and a spiral binding that you put together after you have printed your address book pages.

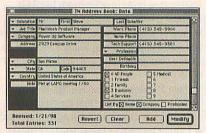
The program opens to the Browse format, a horizontal listing of all the fields in the address book. Address Book Plus comes with six display formats: Browse, Address Book, Phone List, Rotary File, Label, and Envelope. The Browse format is the default when you create a new Address Book file. The new data that you enter in the Data Entry window is immediately visible in the Browse format.

Address Book Plus comes with 16 predefined fields such as Job Title, Birthday, and a section for remarks.

You can rename any field using the Modify Field dialog box. Some of the fields have a Smart List option. Smart List is a search feature that gives you the option of scrolling through a list to look for a particular entry, or typing the first few letters of the item you want directly into the appropriate field. For example, instead of typing *San Juan Capistrano*, type *san* in the city field, press Tab, and Address Book Plus automatically gives you the first entry that starts with *san*. If there is more than one possible entry, a pop-up menu with all the options appears.

Address Book Plus not only lets you display entries by name, company, and/or profession, but it also has ten user-defined categories. Categories could include business, personal, service club, and so on. Each entry must be assigned at least one category. This allows you to list a person by name, *Dr. John Brown*, by profession, *Doctor*, and as a personal contact.

Despite all of its convenient data entry features, Address Book Plus sometimes feels awkward in use. Because the entry screen covers the Browse format on Macs with 9-inch monitors, you will be constantly switch-



	fiddress Bo	ok	IL Just Phones III
PRESTREMANDON 158 Presiding Ave Directing, NY 112 Briss Energy		4 600729-3000 1 778905-8000	150/330 Recerbs Show All Lief by Polisportia PC Cross Hill, Inc. 4 Draham
Business	Pertfolia Sys	lens	POPE
Name	Brien	Smage	Perspect Systems, Inc. + Co.
fitte			Portforio System • Brian Se
Address	158 Flashing	Ave	Prified): * Stories Solotius
City	Brooktyn	St W	Pronetheus Products Inc.
Zip Cotry	11209		ProidE Dave constrit.
Phone 1	690 729-39		ne Stone Riggins & Dougsger Rick Ripley
Phone 2	718 935 - 95	01 ( tec	P. B.C. PRO Enterprises
Phone 3			Hindrey floorey
Phone 4			Toe Flook # Down
Nate			Beth Accompand • E.R.A.S.M. Socks 6F0 • David Socks
Catt No	rint 1	late	Dovrd Sawers • Hoorkeyten
Cat2	1	ext	CATTER THE PROPERTY OF THE PARTY OF THE PART

### **Entry Ways**

Double-clicking on a name in Address Book Plus's Browse format brings up this entry screen (top). The field labels with triangles have configurable pop-up lists of their most common values to speed up data entry. The Browse listing is behind the entry window. DynoDex (bottom) puts the list and the entry screen side by side, which is easier to use. The area at the top of the entry screen is a WYSIWYG display of how the record will print.

ing back and forth between the two views. Another problem is that the Address Book Plus program and documentation refer to the address-book print-out sizes in generic terms, such as senior loose-leaf, rather than associating size with a specific brand of address book such as the Day-Timer. This can be confusing if you are trying to buy an address book to use with your printouts.

Address Book Plus integrates well with Power Up's new DA, Letter Writer Plus, a word processor designed for easy letter creation and envelope printing. Letter Writer Plus is an improved version of ExpressWrite (see *Reviews*, October 1989). Address Book Plus documents can serve as mail merge data files for Letter Writer Plus. The combination of the two packages should easily meet most people's needs for address books and common business correspondence.

### DynoDex

One of the most successful companies in recent years is filoFax, a British firm whose six-ring organizer has spawned several clones, including Day Runner and Lefax. DynoDex can print double-sided address pages in the filoFax format. The DynoDex package includes a six-ring binder, clear letter tabs, and 100 sheets of the punched and perforated DynoDex paper.

The DynoDex user interface emphasizes speed and convenience. The data entry screen is always visible, and almost all menu choices have keyboard equivalents. If you prefer using the mouse, there's an icon palette with the most common functions. At the top of the entry screen is a WYSIWYG display of how the record will print (see "Entry Ways"). DynoDex lets you rename all the field headers and control which fields are printable. It also has an Initial Caps function that speeds data entry by automatically capitalizing first letters. A small but useful feature DynoDex has that Address Book Plus doesn't is that it lets you set tab order, so you can skip over fields that you don't normally use, like the country field.

Instead of a Browse screen, Dyno-Dex displays fields in Just Phones (shows names and phone numbers), (continues) Adobe Type Manager™ is a trademark and PostScript® is a registered trademark of Adobe Systems Incorporated.



Introducing the Kodak Diconix M150 plus printer. Don't take a Mac anywhere without one. Now you can print out a sudden revision, a quick letter, an instant overhead anywhere!

Just think of all the things you can do if you have a printer with your Macintosh computer. Those last-minute improvements on the presentation. And the letters and reports that could be on their way right now. Then there's the sheer convenience of being able to read what you write before

you get back to the office.

It's all easy if you have the new Kodak Diconix M150 plus printer. It's easy to carry (3.1 lbs.), prints PostScript\*-quality outline fonts using Adobe Type Manager™ software, as well as presentation graphics. And it works as well on the desktop as it does on the road. No printer in the world is quieter, smaller or lighter.

> Go ahead, give in to temptation, call for the name of your nearest dealer in the U.S. or Canada: 1800 255-3434.

Macintosh computer and new Kodak Diconix printer

# THEOTHER?

The new vision of Kodak



© Eastman Kodak Company, 1990

You won't find a petter deal.
Save \$\$\$ with free ups ground shipping. overnight delivery - only \$7.



TYPESTYLER
(Broderbund) Create a wide variety
of special effects
for typefaces. Type
your text and then
bend, twist and
rotate for dramatic
results, 256 colors,
126 editable patterns,
64 shades of gray,
dropshadows, 3D
effects and kerning
\$119



ULTRA PAINT (Daneba)
Four-graphics applications in one software
package: B&W/color
painting, gray scale
image processing
and object-oriented
drawing. Access 256
colors, a multi-color
airbrush, editable
mask and lasso, a
water droplet tool
and more! \$124



THE MICROSOFT
DEFIGE (Microsoft)
Contains four programs that maximize productivity when used together.
Includes MicroSoft Word, MicroSoft Excel, MicroSoft Excel, MicroSoft PowerPoint, and MicroSoft Mail: \$529



CUTTING EDGE DISK ORIVES
(Cutting Edge)
These external hard drives
plug right into your Mac's
SCSI port and have a
streamlined design to fit
comfortably under your Mac.
They are preformatted and
ready to use immediately, See
listings below for full range of
Cutting Edge Disk Drives.

### **ACCESSORIES**

Apple
The second secon
Toner Cartridge LaserPrinter II\$115
Toner Cartridge LaserPrinter
Plus\$111 Basic Needs, Inc.
Basic Needs, Inc.
CPU Stand\$16
Dust Cover - Imagewriter II (grey
nylon)
Dust Cover - Mac Ilcx RGB &
Extended Keyboard \$12
Extended Keyboard\$12 Dust Cover — Mac Plus & Keyboard
Dust Cover — Mac Plus & Reyboard
(grey nylon)\$11
(grey nylon)\$11 Dust Cover — Mac SE & Extended
Keyboard (grey nylon) .511 Keyboard Flip .56 Large Screen Monitor Stand .538 Laser Printer Stand .528
Keyboard Flip\$6
Large Screen Monitor Stand \$38
Laser Printer Stand \$28
EID Center Co.
Teak Disk Holder - 50 \$14
Teak Disk Holder — 50       \$14         Teak Disk Holder — 100       \$21         Teak Disk Holder — 150       \$31
Teak Dick Holder — 150 \$31
Teak Double Draw Disk Holder —
140\$25
Ergotron
MacTilt SE — Platinum\$68
I/O Designs
Macinware Mac Ilcx Carrying
Case \$85 Macinware Plus Case \$64 Macinware SE Extended Carrying
Macinware Plus Case
Macinware SE Extended Carrying
Case \$75
Case\$75 Macinware SE Extended Carrying
Coop (block)
Case (black)
The Ultimate SE Carrying Case
Black
Hibbon IW II — Black\$4
Ribbon IW II — Four Color \$12
Interex
Various Cables CALL
Kensington
Kensington Anti-Glare Filter \$33
Kensington Anti-Glare Filter \$33
Kensington Anti-Glare Filter \$33
Kensington Anti-Glare Filter
Kensington Anti-Glare Filter
Kensington Anti-Glare Filter \$33 Apple Security Kit \$33 Apple Hi-Res RGB Anti-Glare Filter \$63 Mac II CPU Stand \$20
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare         Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Westension
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare         Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Westension
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare         Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Westension
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare         Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Westension
Kensington         \$33           Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Wextension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree SD Surge Protector         \$54           PowerBacker 360 LIPS         \$269           PowerBacker 360 LIPS         \$269
Kensington         \$33           Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Wextension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree SD Surge Protector         \$54           PowerBacker 360 LIPS         \$269           PowerBacker 360 LIPS         \$269
Kensington         \$33           Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Wextension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree SD Surge Protector         \$54           PowerBacker 360 LIPS         \$269           PowerBacker 360 LIPS         \$269
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand w/extension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree 50 Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac         Platinum         \$63           Tilt-Swivel         \$21
Kensington         \$33           Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Wextension Cables         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree 50 Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac — Platinum         \$63           Till-Swivel         \$21           Polaroid         \$21
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Stand         \$64           Mac II Stand w/extension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree 50 Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac         Platinum         \$63           Tift-Swivel         \$21           Polaroid         \$35           Circular Polarizing Filter         \$35
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Stand         \$64           Mac II Stand w/extension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree 50 Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac         Platinum         \$63           Tift-Swivel         \$21           Polaroid         \$35           Circular Polarizing Filter         \$35
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Stand Mextension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree SD Surge Protector         \$54           PowerTree SD Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac         Platinum         \$63           Tillt-Swivel         \$21           Polaroid         Circular Polarizing Filter         \$35           Targus, Ltd.         MacPlus/SF Carry Case (black)         \$54
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Stand Mextension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree 50 Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac         Platinum         \$63           Tilt-Swivel         \$21           Polaroid         Gircular Polarizing Filter         \$35           Targus, Ltd.         MacPlus/SE Carry Case (black)         \$54           MacPlus/SE Ext Keyboard
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Stand Mextension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree SD Surge Protector         \$54           PowerTree SD Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac         Platinum         \$63           Tillt-Swivel         \$21           Polaroid         Circular Polarizing Filter         \$35           Targus, Ltd.         MacPlus/SF Carry Case (black)         \$54
Kensington         \$33           Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Monitor Stand         \$64           Mac II Stand Wextension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree 50 Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac         Platinum         \$63           Till-Swivel         \$21           Polaroid         Sircular Polarizing Filter         \$35           Targus, Ltd.         MacPlus/SE Carry Case (black)         \$54           MacPlus/SE Ext Keyboard         S69
Kensington         Anti-Glare Filter         \$33           Apple Security Kit         \$33           Apple Hi-Res RGB Anti-Glare Filter         \$63           Mac II CPU Stand         \$20           Mac II Stand Mextension         \$64           Cables         \$64           MasterPiece Mac II         \$105           PowerTree 50 Surge Protector         \$54           PowerBacker 360 UPS         \$269           System Saver Mac         Platinum         \$63           Tilt-Swivel         \$21           Polaroid         Gircular Polarizing Filter         \$35           Targus, Ltd.         MacPlus/SE Carry Case (black)         \$54           MacPlus/SE Ext Keyboard

BASE

(3.5) . Disks – Maxell

Sony Disks

Disks - 1.44 Mb High Density

- DS/DD (box of 10) . . . . \$24 - DS/DD (box of 10) . . . . . . \$14

- 1.44 Mb High Density ...\$22

### Disks - DS/DD (box of 10) . . . . . \$13 COMMUNICATIONS AND **NETWORKS**

CE Software	
QuickMail 2.2 (1-10 users)	.\$319
QuickMail 2.2 (1-5 users)	\$219
CompuServe	
CompuServe Subscription Kit	604
CompuServe Navigator	539
DataViz	
MacLink Plus w/Cable 4.1	.5119
MacLink Plus/Translators	\$96
FreeSoft	
White Knight 11.0	\$85
Software Ventures	no deducate
Microphone II 3.0	\$215
TOPS	
InBox 3.0	\$215
InBox Plus 3.0	\$628
TOPS 3.0 Network Bundle	.φυευ
	<b>#</b> 100
Mac	.4100
TOPS 3.0 Network Bundle	
DOS	.\$165
Traveling Software	
Lap-Link	\$81
Lap-Link III - Connectivity Pac .	.\$119
Lap-Link III - NetworkPac	.\$189
	-
DATABASES	
Active	

DATABASES	
Acius 4th Dimension 2.0	.\$468
Blyth Omnis 5	.\$355
FileMaker II	
FoxBASE + /Mac 2.0 Odesta	
Double Helix III	.\$337

### DRIVES

and the at story	\$420

MacStack 30 Meg	.\$499
MacStack 45 Meg	\$589
MacStack 60 Meg	.\$649
MacStack 80 Meg	.\$769
MacStack 44 meg Removable	
Cartridge Drive	.\$839
Cutting Edge	. 16
800K Floppy Disk Drive	.\$149
Under the Mac Drives	and the later
20 + meg	.\$339
30 + meg	.\$389
45 + meg	\$449
60 + meg	\$489
80 + meg	\$549
Cutting Edge 45 meg Removable	Hard
Drive	

### HOTLINE TECHNICAL SUPPORT available (8 AM-6 PM EST.)

Dolphin Systems Technology
Climan 44 Demovable Contrides
Flipper 44 Removable Cartridge
Drive\$829
Integra 20 meg drive
Integra 30 meg drive \$439
Integra 40 meg drive\$499
Integra 40 meg drive
Integra 60 meg drive \$589
Integra 80 meg drive\$645
Fujitsu
800K Floppy Disk Drive \$159
Peripheral Land, Inc.
Cartridge for Turbo 40Mb \$109
Infinity Turbo 40 Meg \$998
Infinity Turbo Dual 40 Meg \$1,798
Turbo Floppy

### MEMORY/UPGRADES

MacSnap 1024 Mer	nory E	Expa	insic	n B	oai	d														.\$31
MacSnap 2s cmos																				\$19
MacSnap 4s cmos															-					\$39
MacSnap 8s cmos																				\$81
MacSnap 2SE																				
MacSnap 524			Andrea				203		-			-		1						.\$19
MacSnap 524E	******		***				***		20.57				•							\$18
MacSnap 524S (inc																				
MacSnap 548	1. 500	31 111	10110	ice,	*		• •			 *		*	• •			•		• •		643
MacSnap 548E	: :::::											*								.041
MacSnap 548S (inc	a. SCS	SI in	terta	(ce				* 1		 10		*						٠.		.\$47
MacSnap Plus 2 .											٠.									.\$29
MacSnap Tool Kit						. 2														\$1
RamSnap	THE RESERVE											I a in			 100		200		1/2	\$2

1 Meg SIMMs 120ns	• •			***	•	٠		٠	100		*	•		100		\$89
1 Meg SIMMs Surface Mount 120ns		 	*	. ,									. ,			\$89
1 Meg SIMMs Surface Mount 100ns		 										•				\$99
1 Meg SIMMs Surface Mount 80ns . 1 Meg SIMMs Surface Mount 70ns .		 				*										\$109 \$119

### **EDUCATION/ENTERTAINMENT**

A Lasting Impression

ResumExpert (Word 3.0/4.0 ver)\$39
ResumEypert Cover Letters \$39
ResumExpert — Computer Science & Engineering \$39 ResumExpert — Education
Science & Engineering\$39
ResumExpert — Education
Edition\$39 ResumExpert — Finance &
ResumExpert - Finance &
Banking Edition \$39
ResumExpert — Glamour
Edition\$39
HesumExpert — Finance & Say Banking Edition . \$39 ResumExpert — Glamour Edition . \$39 ResumExpert — Health Care Edition . \$39 ResumExpert — Manager Edition . \$39 ResumExpert — Say Say Bassim Expert — Say Say Bassim Expert — Say Say Bassim Expert — Students . \$39 ResumExpert — Students
Edition\$39
ResumExpert — Manager
Edition\$39
ResumExpert — Sales &
Marketing Edition\$39
ResumExpert — Students
Edition\$39 Broderbund
Broderbund
Shufflepuck Cafe\$23 SimCity\$29
SimCity\$29
Type! .\$18 Where in Europe is Carmen Sandiego? .\$29 Where in the USA is Carmen
Where in Europe is Carmen
Sandiego?\$29
Where in the USA is Carmen
Sandiego?
Where in the USA is Carmen Sandiego?\$29 Where in the World is Carmen
Sandleyor
Bullseye
Ferrari Grand Prix 1.6 \$32
Pokker Implane Flight Simulator\$24
Fokker Triplane Flight Simulator \$24 P51 Mustang 2.04 \$31 Davidson & Associates Math Blaster \$26
Math Pleater
Marris Coffman
Nordic Software MacKids (all volumes available)ea. \$28
ProCohool Book
PreSchool Pack\$35 Word Quest\$30
Penton Overseas
Vocabul para Lovel 1
VocabuLearn Level 1 Ger., Fr., Ital., Sp each \$29 VocabuLearn Level 2
Vocabul earn Level 2
Ger Er Ital Sp. each \$20
VocabuLearn Level 2 Ger., Fr., Ital., Sp each \$29 VocabuLearn Level 1 or 2
Jananese each \$35
Silicon Beach
Dark Castle \$32
Dark Castle
Spectrum Holobyte
Falcon 2.0
Tetris\$19
XOR Corporation
MacGolf Classic
NFL Challenge\$54
MacGolf Classic \$52 NFL Challenge \$54 Road Racer \$36
NFL Challenge \$54 Road Racer \$36 TaskMaker \$27
NFL Challenge         \$54           Road Racer         \$36           TaskMaker         \$27           GRAPHICS AND DESIGN

### SOFTWARE

Adobe Systems, Inc.	
ATM & ATM Plus Pack	.\$159
PhotoShop	
Adobe Type Manager	
Adobe Plus Pack	.\$109
Adobe Type Set 1	
Adobe Type Set 2	\$59
Illustrator 88 1.9.3	.\$278
Streamline	



ON Location will find it within seconds. Satisfaction

Highest quality surface mount in a full range of speeds available. See listings for prices.



ANDREW TOBIAS —
MANAGING YOUR
MONEY (MECA)
Fully integrated software
program which covers
every aspect of personal
and small business
linance. Write and print
checks, set up a personal
budget, estimate taxes,
calculate your net worth
and more. \$124

- HUGE INVENTORY We carry 1800 Mac items including thousands of disks, ribbons and accessories.
- FREE GROUND SHIPPING -We ship in-stock items the same day.
- ALL ITEMS COVERED BY 120-DAY WARRANTY.
- WE CHARGE YOUR CREDIT CARD WHEN WE SHIP Visa and MasterCard accepted.
- CORPORATE PURCHASE ORDERS ACCEPTED — call us now for credit approval. COD orders add \$6 - cash or certified check only
- INTERNATIONAL ORDERS WELCOME - Outside conti-nental USA call for shipping charges and policies.
- TOLL-FREE TECH SUPPORT HOTLINE (8 AM to 6 PM EST.)

Aldus
Freehand 2.0\$329
Page Maker 4.0 \$400
PageMaker 4.0\$499 Persuasion 2.0\$329
Altsys
Art Importer (Keymaster)\$89
Fontastic Plus 2.02
Fontographer 3.05\$249
Metamorphosis
Broderbund
Print Shop 1.3
TypeStyler\$119 The Electronic Whole Earth
Catalog-CD\$89
Claris
MacDraw II
Custom Applications
Freedom of the Press \$259
Data Translation PhotoMac 1.1
PhotoMac 1.1
Deneba Software
Canvas 2.1\$188
UltraPaint\$124
Digital Vision, Inc.
Computer Eyes
Computer Eyes For Mac-Color\$349
Studio/1\$96
Studio/8 \$296
Emerald City Software
Smart Art I, If or III each \$84
TypeAlign
Farallon Computing
MacRecorder 2.0
ScreenRecorder\$125
Letraset
ColorStudio
DesignStudio\$619
FontŠtudio
ImageStudio 1.5
LetraStudio\$274
Ready,Set,Go 4.5 \$274 MacroMind
MacroMind Accelerator \$125
MacroMind Director\$125
Olduvai
VideoPaint\$279
Quark
QuarkStyle\$169
Quarkotyle

Xpress 2.12\$479 Silicon Beach
Digital Darkroom\$248 SuperPaint 2.0\$124
Super3D\$315
SuperCard
UltraSpec 1.0
PLUS\$115 Springboard Publisher\$109
Strata Strata Vision 3D
Strategic Mapping Inc. MapMaker 4.0 \$295

### SAVE MEGA \$\$ GROUND SHIPPING

Studiotronics
Colorset\$229
SuperMac
PixelPaint Professional \$389
Tactic Software
ArtClips 1st Edition
ArtClips 2nd Edition\$64
ArtFonts volume 1,2, or 3 each \$54
lcon-lt! 2.0
SoundClips volume 1. or 2 each \$46
Timeworks
Publish It!
Zedcor
DeskPaint & DeskDraw 3.0 CALL
Deskraint & DeskDraw 3.0 CALL
HARDWARE/PERIPHERALS
NANDWANE/PENIPHENALS
CoStar
LabelWriter
Laberviller

Organizer (LaserWriter II Series Printer Stand) \$184 Cutting Edge Monitor — 19 in. Two Page Monochrome — SE, SE/30 or II \$959 Farallon Computing PhoneNET Plus, SE & II \$33 Timbuktu 3.0 \$95 Timbuktu Remote \$125 Kennect Technology Drive 2.4 \$329 Rapport \$199 Micron 8-Bit Video Card NB6-48 \$369



- 0101
Microtek
Microtek MSF-300GS
Scanner \$1,589 Microtek MSF-300Z Color/Gray
Scanner \$1,629
MacInterface for the Microtek
300Z\$369
RasterOps
RasterOps Colorboard 264 \$755 Selkosha
Seikosha SP 1000 AP Printer\$235
Sharp
The Wizard \$229
Wizard - Dictionary Thesaurus
Software
Wizard - Time Management
Software
Mac Linking Cable and
Software
ThunderWare
LightningScan \$368
ThunderScan 5.0 . \$186

### **INPUT/OUTPUT DEVICES**

Asher Enginering
QuadLynx Tracball\$58
Cutting Edge
105 Keyboard ADb \$125
Datadesk International
HyperDialer\$29
Mac-101 Keyboards\$135
Mac-101 Int. Keyboards Call
Kensington
Turbo Mouse ADB\$108
Turbo Mouse \$108
Koala
MacVision 2.0
Kraft
Joystick Premium III\$49
Kraft ADB Trackball \$79
QuickStick 3 Button
Kurta
IS/ADB Tablet 81/2 × 11\$254
MicroTouch
The UnMouse
Mobius Products
Cordless Mouse\$95

### INSTRUCTIONAL SOFTWARE

**Personal Training** 

Each Series offers a beginning, inter-mediate or advanced . . . each \$36 (each 90-minute tutorial contains an audio cassette, disk of lesson files, and a summary card) Personal Training for Excel XL1 Beginning Spreadsheets . .\$36 XL2 Intermediate

Spreadsheets .... \$36

ORDER BY PHONE OR MAIL

We ship same day.

(choose free ground or overnight \$7.00)



1-800-622-7

Call toll-free 24 hours a day, 7 days a week.

(In Canada, call 1-800-243-5622)

CORPORATE EDUCATION & AEROSPACE ORDERS WELCOME

Price and availability subject to change without notice. Sales tax: CT and NJ residents add sales tax. We reserve the right to limit quantities.

	ject to change without notice. Sales tax: CT and NJ residents add sales tax. We reserve the right to limit quantities.	All products covered by 120-day limited warranty
37.5	© 1990 MacSHOPPER, Inc.	manty.
Tel	e-Plaza, Lakewood, NJ 08701-	9836

Master Card

Mail to: MacSHOPPEH Tele-Plaza, Box 797, Lakewood, NJ 08701-9836			MSWFØ
Product Name	Quantity	Cost ea.	Total
	Total Merchan	dise	
My computer is:	Sales Tax		
l enclose my check for \$	Overnight Deli	very \$7.00	
Or charge my MasterCard or Visa	TOTAL		
	Exp. date:		
Name		Ар	. #
Address	(	)	
City State Zip	Telepho	ne#	



SAM (Symantes)
Prevents viral attacks,
detects viruses already
in your system, and
repairs infected files.
Works behind the scenes monitoring activity and sierts you to any irregularities that may be the result of a virus. \$62



TOPS NETWORK BUNDLE
FOR THE MACINTOSH
(TOPS) Provides file sharing, print spooling and ello-tronic mail for Macs. PC's
and on a TOPS network. File
sharing can be limited with
the use of passwords.
Indigs is the electronic mail
system. This flexible network can be configured as a
distributed or dedicated
server. \$188



SUM (Symantec)
This power ful utility program for the Mac recovers detected files, optimizes your hard disk for maximum efficiency, provides file encryption and password protection, and backs up your data fast, Recovers lost files, \$94

Save \$55 with free ups ground shipping Overnight delivery

\$719

Wolfram Research, Inc. Mathematica Mac II 1.2 . .

WordPerfect

XL3 Advanced Spreadsheets\$36
XL4 Creating Business
Graphics
XL5 Building Databases\$36
XL6 Beginning Macros \$36 XL7 Advanced Macros \$36
XL7 Advanced Macros536
Personal Training for FileMaker II
FMI Beginning FileMaker \$36
FM2 Intermediate FileMaker\$36
FM3 Advanced FileMaker \$36
FM4 Tips & Techniques \$36 Personal Training for FreeHand
FH1 Beginning Level \$36
Personal Training for HyperCard
Ha Haing Hypercord \$36
H1 Using Hypercard\$36 H2 Creating Cards & Stacks\$36
Personal Training for Illustrator 88
A1 Beginning Illustrator \$36
A2 Intermediate Illustrator \$36
A3 Creating Special Effects \$36
Personal Training for Macintosh
B1 The Basics
(2 floppy drives) \$36
B2 The Basics
(Plus or Se w/HD) \$36
B3 The Basics (Mac II w/HD) . \$36
Personal Training for Persuasion
LP1 Beginning Persuasion \$36
Personal Training for PageMaker
P1 Beginning PageMaker \$36
P2 Intermediate PageMaker\$36
P3 Tips & Techniques\$36
P4 Advanced Features \$36
Personal Training for Word
W1 Beginning Word \$36
W2 Intermediate Word \$36
W2 Intermediate Word \$36 W3 Advanced Word \$36
W2 Intermediate Word\$36 W3 Advanced Word\$36 W4 Additional Features\$36
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works
W2 Intermediate Word\$36 W3 Advanced Word\$36 W4 Additional Features\$36 Personal Training for Works M1 Database & Form Letters\$36
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36
W2 Intermediate Word\$36 W3 Advanced Word\$36 W4 Additional Features\$36 Personal Training for Works M1 Database & Form Letters\$36 M2 Advanced Databases\$36 M3 Spreadsheets\$36
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Voice & Video
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Voice & Video Excel 2.2 Getting Started —
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Voice & Video Excel 2.2 Getting Started —
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Woice & Video Excel 2.2 Getting Started — VCR Tape \$35 Excel 2.2 Advanced — VCR Tape. \$35
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Voice & Video Excel 2.2 Getting Started — VCR Tape \$35 Excel 2.2 Advanced — VCR Tape. \$35 PageMaker Getting Started —
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Voice & Video Excel 2.2 Getting Started — VCR Tape \$35 Excel 2.2 Advanced — VCR Tape. \$35 PageMaker Getting Started —
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Woice & Video Excel 2.2 Getting Started — VCR Tape \$35 Excel 2.2 Advanced — VCR Tape \$35 PageMaker Getting Started — VCR Tape \$35 Word 4.0 Getting Started — \$35 Word 4.0 Getting Started — \$35
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Woice & Video Excel 2.2 Getting Started — VCR Tape \$35 Excel 2.2 Advanced — VCR Tape \$35 PageMaker Getting Started — VCR Tape \$35 Word 4.0 Getting Started — \$35 Word 4.0 Getting Started — \$35
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Voice & Video Excel 2.2 Getting Started — VCR Tape \$35 Excel 2.2 Advanced — VCR Tape. \$35 PageMaker Getting Started —
W2 Intermediate Word \$36 W3 Advanced Word \$36 W4 Additional Features \$36 Personal Training for Works M1 Database & Form Letters \$36 M2 Advanced Databases \$36 M3 Spreadsheets \$36 M4 Word Processing \$36 Woice & Video Excel 2.2 Getting Started — VCR Tape \$35 Excel 2.2 Advanced — VCR Tape \$35 PageMaker Getting Started — VCR Tape \$35 Word 4.0 Getting Started — \$35 Word 4.0 Getting Started — \$35

Dove		
Marathon 020 MSE	\$57	9
Marathon Multi-Com .	\$31	5
MacSnap Tool Kit		5
MaraThon 030 Accele	erator\$44	19
MaraThon 030X		
MaraThon Racer		
Orchid Technology		
MacSprint II	\$24	9

### MODEMS AND FAX

and the state of t	84	25	wil.	10	de	<u>au</u>	=	
Abaton								
InterFax 12/48								.\$264
InterFax 24/96		·						.\$419
Best Data Products								
SmartOne 2400/1200								.\$145

SmartOne 9600 bps v32 \$695 Travel Modem \$229
Orchid Technology OrchidFax Modem \$446
Prometheus ProModem 2400M Ext \$199 ProModem 2400SE Internal \$209
ProModem 2400 MFax\$209 Supra Corporation
SupraModem 2400 \$129
SOFTWARE
Advanced Software

DocuComp .....\$109
AEC Management Systems AEC Information Manager . . . . . \$409

### **EXPRESS** SERVICE VERNIGHT DELIVERY Only \$7 Per Order

SAVE MEGA \$\$

GROUND SHIPPING

FastTrack Sch	edule			\$114
Apps Corp.				
Micro TV				\$275
Caere				
OmniPage 2.1				\$539
Carina Softwa				
Voyager 1.2 .				\$88
Claris				
MacProject II.		narramana.		\$369
MacWrite II				\$159
Connectix				
Virtual 2.0 PMN	M) UN	ac II)		\$188
Virtual '030 2.0	VM3			\$115
Dantz				
Retrospect				\$149
DeltaPoint, Inc.	1.			
DeltaGraph		VI 17574 1	visite si	\$99
Deneba Softw	are			
BigTHESaurus				\$63
BigTHESaurus Spelling Coach	Pro 3	1		\$124
Exodus Softw	ara	1. O		ψ124
Retriever				\$50
Informix				фээ
WingZ 1.1				\$245
wingz. I.I				4245

to streets.
Insignia
Soft PC (Mac II)\$245
Intuit
Quicken 1.5\$36
Kaetron
TopDown\$199
Layered
At Once!
Leyperties
MacProof 3.2.1
Meca
Andrew Tobias
Managing Your Money\$124
Microsoft
Event 2.2 \$247
Excel 2.2
The Microsoft Office \$530
The Microsoft Office \$529 The Microsoft Office-CD CALL
Word 4.0
Word 4.0
Works 2.0
Nolo Press
For The Record \$28
WillMaker 3.0\$32
Olduval Corporation
Read-It! OCR 2.1\$245 Read-It! OCR Personal 2.0\$119
Read-It! OCR Personal 2.0 \$119
Power Up
Address Book Plus with Binder \$83
Reference Software
Grammatik Mac 1.0 \$51
LetterWorks\$59
Sensible Software
Sensible Grammar\$53
Softsync, Inc.
Accountant, Inc. Professional\$349
SoftStream
Endeavour Planner \$95
HyperHIT\$125
Softview
MacIntax/Quicken Bundle
Special
Special
MacIntax State Supplements
1989 each \$56
1989 each \$56 Symantec Corporation
More II
More II
THINK's Lightspeed Pascal \$99
Symmetry
KeyPlan\$245
T/MAKER

WordPerfect 1.0.3
UTILITIES
1st Aid Software
Complete Undelete
Deluxe 1st Aid Software Kit \$120
Sector Collector\$36
Abbott Systems, Inc.
CanOpener\$64
Programmer's Assistants \$75
Shortcut\$45
AL Soft
DiskExpress II 2.04
Font/DA Juggler Plus 1.16 \$42
MasterJuggler 1.5 \$56
MultiDisk 1.2
Berkeley System Design, Inc.
After Dark\$24
Bravo
SPAMM\$48
Fifth Generation System
DiskLock
FastBack II\$107
PowerStation\$34
PowerStation
SuitCase II 1.2
H.IC/Microcom
Virex 2.3
Kent Marsh
MacSafe II
NightWatch 1.03
QuickLock 1.0
On Technology
On Location\$75
Software Innovations
HandOff\$31
Superwac
DiskFit
SuperSpool 5.0
Symantec Corporation
Symantec AntiVirus for the Mac \$62
Symantec Utilities for Macintosh



WriteNow 2.2



. . . . . . . . . . \$118

Symmetry

HyperDA ...



.....\$94

Acta Advantage .....

1-800-622-7006 Call toll-free 24 hours a day, 7 days a week.

(In Canada, call 1-800-243-5622)

Price and availability subject to change without notice. Sales tax: CT and NJ residents add sales tax. We reserve the right to limit quantities. Order until 7:00 pm (EST) for overnight delivery and until 12:00 Noon (EST) for same day ground shipping. MSWFØ Name and Address, or All Fields. You can print any of these lists. Having the lists next to the entry screen, rather than behind it as with Address Book Plus, makes it easier to browse the list and view and change the entries.

DynoDex provides many more flexible tools for finding, corresponding, and selecting records than Address Book Plus does. Both programs let you find records using any field, but DynoDex gives you the capability to change the found records. Its selection function can use two fields at once, with logical and arithmetic operators.

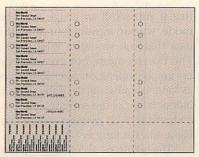
### **Telephone Dialing**

DynoDex dials from within the application; Address Book Plus comes with a DA called Address Book Dialer. Both programs let you specify tone or pulse dialing through a serial port or the Macintosh speaker. Presumably, the DA is for quick and easy use while you're working in other applications; unfortunately, the Dialer takes a long time to open, and this problem gets worse as you add names. On an SE/30 with 5MB of RAM, the Dialer took 12 seconds to open a file of 330 names and 20 seconds for a 650-name file. This is too slow for casual use; the best solution is to leave the DA open all the time under MultiFinder.

The two programs share a disadvantage when dialing through a modem. They dial the number just fine, but at the end of the dialing string they don't send a command to disconnect the modem. This leaves the modem on the line, preventing the recipient from hearing you until the modem times out and switches off. There are workarounds in both programs, but both should tell the modem to disconnect.

### Printing

Both Power Up and Portfolio Systems supply paper for use with their products. Portfolio provides six-ring Dyno-Dex paper in four colors and also sells unpunched half-page paper. Power Up has a large selection of pin-feed and single-sheet pages for its program. One sheet of the six-ring DynoDex paper provides three filoFax-size pages, and the extra space on the page is used to print the DyNet, a reduced listing that you can staple together and carry with



### DynoPrinting

This diagram shows the ingenious way that Dyno-Dex gets the most out of its perforated six-ring paper. The three organizer pages have ten entries each, and the small area at the bottom of each organizer page that would normally be wasted is used for a miniature listing called a DyNet.

you (see "DynoPrinting"). Although it's possible to print on an ImageWriter with DynoDex, it's best to use a laser printer or another sheetfed high-resolution printer like the HP DeskWriter. The current version of DynoDex can print the DyNet only on PostScript printers and the GCC Personal Laser-Printer. Portfolio plans to provide DyNet printing on QuickDraw printers, such as the Apple LaserWriter IISC and the HP DeskWriter, in the next release. DynoDex prints in four main formats: six-ring; three-ring half-page, which is used by the larger Day Runner; three-ring letter size; and DyNet.

Printing flexibility is where Address Book Plus shines. It has five standard sizes for address books and phone lists, and two standard sizes for envelopes, Rolodex cards, and labels. And for every format, if you don't like the standard sizes, you can define a custom paper size. You can print to singlesheet paper on the LaserWriter or to tractor-feed paper on the ImageWriter. Unlike DynoDex, which only lets you set one font for the whole print job, Address Book Plus allows complete control over the font and style of individual fields. DynoDex prints four lines for each record, regardless of how long or short that record is; Address Book Plus intelligently expands and shrinks the record height to match the amount of information. Unfortunately, Address Book Plus prints on only one side of the page.

I found printing with both programs to be very easy. DynoDex gives you exhaustive instructions on feeding the pages so that both sides print

correctly, and Address Book Plus's preset formats resulted in perfect print jobs on both LaserWriters and Image-Writers. Printed output from both programs was excellent.

### **Get Organized**

Both programs have much to recommend them. And both have faults. They both have excellent import and export functions, so your address books can easily be used as mail merge data files. DynoDex suffers from the lack of a DA version and from its inability to print envelopes and labels. Portfolio Systems said at press time that DynoDex 2.0, which should be available by late spring, would add those features. Address Book Plus's DA needs to be faster, and adding two-sided printing and better selection functions would also help.

If its somewhat limited selection of print formats meet your needs, and if you have a high-quality printer, then DynoDex is a good choice for its excellent user interface and double-sided printing. But if you need to print othersize address books, Rolodex cards, labels, and envelopes, or if you'll be printing on an ImageWriter, then Address Book Plus is a better choice.

—Tom Negrino

See Where to Buy or circle 703 (Address Book Plus), 727 (DynoDex) on reader service card.

大

32-bit Graphics Board

### SPECTRUM/24 SERIES III

Pros: Built-in graphics accelerator; hardware pan and zoom; support for 13- and 19-inch monitors; huge virtual desktops; RGB NTSC video output. Cons: Expensive. Company: SuperMac Technology. Requires: Mac II; 2MB RAM. Hard disk and additional RAM recommended. List price: \$3999.



Since the Spectrum/24 board was reviewed in the January 1990 *Macworld*, two signifi-

cant things have happened: SuperMac has augmented its 24-bit board with a graphics accelerator, and Apple has released two 24-bit graphics boards of its own (including one with an accel-(continues)

erator). Because of these developments, a brief second look at the Spectrum/24 is in order.

All the earlier advantages of the Spectrum/24 are still in place. You can create a virtual desktop larger than the actual display (up to 4096 by 1536 pixels), and pan smoothly and quickly. You can zoom in and out (2× magnification), with full panning and functionality while zoomed in. And you can get a 32-bit display on a large 1024-by-768-pixel screen.

### Do You Need an Accelerator?

The major new feature of the Spectrum/24 is the on-board graphics accelerator. Why do you even need an accelerator? Simple. In 32-bit mode, each pixel uses four times as much memory as in 8-bit mode. That means

that if you scroll an image in 32-bit mode, you are moving four times the data that you would in 8-bit mode. This doesn't mean, however, that every graphic operation takes four times as long, because much of the work is independent of the current bit depth, (otherwise, 8-bit graphics would take eight times as long as 1-bit graphics).

The graphics accelerator on the Spectrum/24 works with certain 32-bit QuickDraw commands (but only when the display is in 32-bit mode). When you start up, the SuperMac cdev patches the selected low-level QuickDraw commands. When those commands are called, control is passed to the accelerator on the Spectrum/24. The accelerator carries out the necessary operations and then returns control to QuickDraw. This acceleration

affects only the display connected to the Spectrum/24.

Adding a graphics accelerator to the Spectrum/24 board improved the performance of only some operations. Using GeeBench, a QuickDraw routine –performance program developed by Apple's Jean-Charles Mourey, we ran 28 comparison tests (see "Spectrum/ 24 Benchmarks").

The single greatest boost is in the performance of the Regular CopyBits routine, whose performance improved by a factor of 12.0. Other benchmarks—mostly scrolling and filling routines—show a six- to sevenfold improvement in speed. There is no apparent acceleration in line drawing (which doesn't really need it—speed is already comparable to 8-bit mode) or in highlighting and inverting text.

Overall, the Spectrum/24 display in accelerated 32-bit mode performs as well as, if not a bit better than, the Mac IIci's built-in video in 8-bit mode (which itself is just a touch faster than 8-bit mode on Apple's 8-bit video board).

Should you consider buying this board? Possibly, but only if you need both the graphics acceleration and the large screen display. The SuperMac ColorCard 24 with accelerator costs \$1498 and gives you an accelerated 24-bit display on Apple's standard 13-inch RGB monitor. For a little more (\$1999) you could get Apple's new Macintosh Display Card 8 • 24GS, which has two additional benefits: it supports Apple's complete line of Mac monitors, and it boosts performance of all video boards plugged into the Mac. There are nonaccelerator 24-bit video boards but if you're going to go to 24-bit color you'll be better off in the long run spending your money now for graphics acceleration.

Given the downward trend in video board prices, your best bet is to carefully evaluate your needs and shop around. The Spectrum/24 is a powerful and expensive solution intended for people who really need the large display and acceleration, pan, zoom, virtual desktop, and so forth. If that doesn't describe you, you could save thousands of dollars by choosing something more modest.

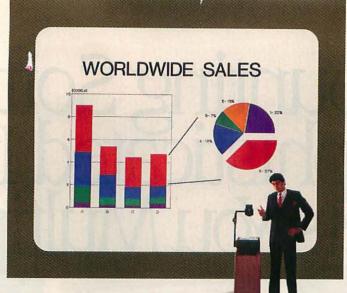
-Bruce F. Webster

See Where to Buy or circle 805 on reader service card.

SP	ECTR	UM/24	BENC	HMARKS

Benchmarks	Spectrum/24 32-bit mode unaccelerated	Mac IIci 8-bit mode	Spectrum/24 32-bit mode accelerated
1-pixel-wide color lines	220	100	200
Vertical scrolling	510	100	70
Simple pattern fill, unclipped	800	100	120
Hilite mode, non-clipped	250	100	250
Horizontal scrolling	830	100	120
Invert area, unclipped	910	100	910
Pixel pattern fill, non-clipped	410	100	60
Short 1-pixel-wide color lines	120	100	130
Region-clipped vertical scroll	450	100	70
Region-clipped horizontal scroll	710	100	110
Shrink image	190	100	190
Solid fill, unclipped	790	100	120
Window movement	650	100	110
Vertical lines	90	100	80
Horizontal lines	100	100	90
Shallow lines	390	100	340
Steep lines	100	100	100
Text drawing	260	100	60
Enlarge image	250	100	250
Blend rectangles	10	100	10
Polygon fills	400	100	120
Regular copyBits	480	100	40
Clipped pattern fill	360	100	60
CopyBits, 1-bit to 8-bit	190	100	200
Oval fill	440	100	60
Mapped copyBits	110	100	110
Region-clipped hilite mode	270	100	270
CopyBits, blend mode	10	100	10

Tests comparing the Spectrum/24 board in both accelerated and unaccelerated modes with the Macintosh Ilci in 8-bit mode indicate which of 28 benchmark operations are substantially improved. Scores for each benchmark are shown as normalized values, with the Mac Ilci's being set at a constant value of 100.



# Impress the critics with your next film.

To make a strong impression, you need to combine the right information with the right presentation tools. And that includes the best overhead transparency film you can buy—3M computer-generated transparency film.

At first glance, most transparency film appears the same. But when projected onto a large screen, 3M film really stands out. Colors are vibrant and true. Characters are sharp and defined. So your polished presentation doesn't lose its shine. Whatever type of plotter or printer you use, rely on 3M film for feeding reliability and a clearer image. 3M transparency films, projectors and accessories are available at your local 3M AV

dealer or office supply dealer. Stop in now for a look at our full line of presentation accessories. For the name of your local source call us at **1-800-328-1371**.

### **FREE 3M Film & Flip Frames**

Return this coupon for a free trial package of 3M laser film. We'll also include Flip Frame™ Transparency Protectors for easy film handling, filing and storage. Offer good in U.S. and Canada only. MW690

and Canada only.

Name

Title

Company

Address

City

State

Zip

Telephone (

Free sample requests must be made with this coupon. No phone calls, please. Mail to: 3M Visual Systems Division, P.O. Box 33050, 3M Center, St. Paul, MN 55133-3050.

The tools to take charge.

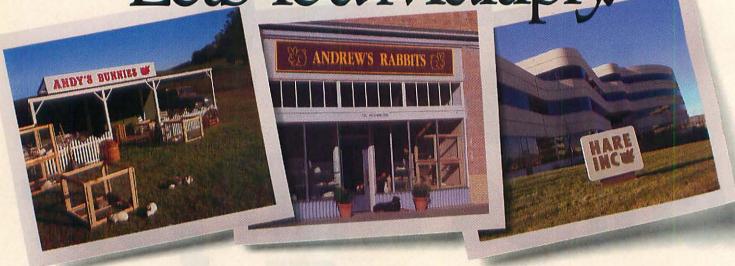
© 1990 3M

3M film looks best on 3M overhead

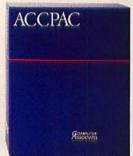
projectors



Accounting Software So Sophisticated It Even Lets You Multiply.



The simple truth is, the business of business is to grow. The



sad truth is, most accounting software can't handle that. Built-in obsolescence seems to be a standard feature.

Which is the

most compelling reason to consider ACCPAC® Simply Accounting® for your Macintosh.

It offers all of the features you need to get up and running quickly today, as well as the more advanced options you'll need tomorrow.

No other package can get you off to such a fast start. "Easy to learn and a snap to use," *InfoWorld* 

called Simply Accounting, "simply magnificent."

And unlike other accounting packages which come with just General Ledger, Accounts Payable and Receivable, Simply Accounting gives you more advanced modules as well, like Inventory, Job Costing, and Payroll.

It all adds up to the best all-inone accounting software you can buy. And it's backed by the world's leading independent software company.

To find out more, call 1-800-531-5236. In Canada, call 1-800-663-6904.



© 1989 Computer Associates International, Inc., 1240 McKay Dr., San Jose, CA 95131

### INTERACTIVE PHYSICS 1.0

Pros: Solid implementation of classical mechanics; attention to pedagogic detail; detailed and convenient interface. Cons: Lacks orbital mechanics section. Company: Knowledge Revolution. Requires: Mac Plus; hard disk. List price: \$249.

Interactive Physics (IP) is a remarkable program-at once more and less than its name suggests. What you get with IP is a complete, fast mechanics-simulation engine, reminiscent of that found in Simul, with an interface that makes it easy, even fun, to set up simple or complex simulations. You also get a short but exceptionally clear manual, a set of demonstrations of fairly complicated setups, and a large portfolio of experiments—some corresponding to standard topics in classical mechanics, and others to topics in beginning mechanical engineering courses.

The material covered is covered exceptionally well, but I wish there were files of simulations for celestial mechanics, electricity and magnetism, wave behavior, and maybe even quantum mechanics. In view of the magnitude of the programming effort required to simulate plain Newtonian mechanics, however, Knowledge Revolution may have to issue these other topics as additional programs. In contrast, Sensei's program, Physics, is a set of standard simulation-demonstrations carefully keyed to physics text-book contents such as electricity and

magnetism, orbits, and waves; though more inclusive, it doesn't compete with IP's depth in mechanics.

### **Artificial Reality**

You can model elementary situations in mechanics in Simul, Stella, or Extend; but IP, with an interface specifically designed for these tasks, takes only about five minutes to learn.

To create a spring simulation in IP, all you do is draw a polygon with a MacDraw-like tool, pick a spring from the tool palette, and connect the spring from any point on the screen to the perimeter of the polygon. Then you pick a dashpot, or damping force, from the tool palette and connect it at another arbitrary point on the periphery of the polygon. To make your model even more complex, draw a square underneath the polygon and secure its position with the anchor tool.

When you select Run from either the palette or the Experiment menu, the polygon falls, stretches the spring, and strikes the square. Then, after clunking past the square, the polygon wobbles around in irregular damped oscillation for many seconds until it finally comes to rest with the spring in a stretched position.

Accurate simulation at this level of complexity really belongs to engineering rather than introductory physics. A simulation with dashpots and colliding blocks and irregular masses is almost too complex for beginners, except to illustrate how common highly irregular or actually chaotic dynamical systems are in real life. A more typical beginning-physics example would be a spring connected to the center of a circle, bobbing endlessly along a single axis; this serves as the simplest model

of regular oscillation.

In the artificial reality of IP, the same tools model both simple and complex systems with ease. A sophisticated user could supplement the program's omissions by adding experiments, for example, setting up models with springs and masses to mimic wave interactions or orbital mechanics.

### A Class Act

This last idea may suggest one way to use IP in classroom instruction, its intended market. In contrast to some types of physics-lab practice, in which you must model mechanical systems as special cases of electronic oscillators, in IP you can fabricate mechanical analogs of the electromagnetic systems. This method at least has the advantage of highlighting the power of simple differential equations to describe dynamical systems of any kind.

But Interactive Physics goes far beyond the type of problem that allows an analytical solution. One demonstration, starting with a set of blocks offset on a base, lets you watch the blocks slowly tilt over, slide off each other, and crash, tumbling and bouncing, to the ground. Individual parameters, such as mass, surface friction, and elasticity, can be set for each block; you can even set gravity to match the planet of your choice (see "Earthquake!"). Although simulation is ostensibly in the domain of physics, it doesn't take much imagination to see its value as a demonstration in civil engineering or architecture.

### The Newtonian Realm

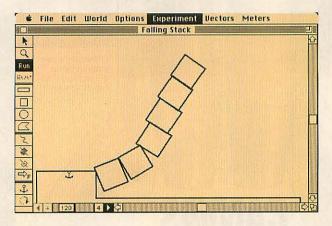
Knowledge Revolution has produced a specialized simulation program that emphasizes Newtonian mechanics: springs, masses, levers, inclined planes. IP's simulation kernel is efficient enough that the program can handle problems in practical mechanical engineering beyond the beginning-physics domain suggested by its name and documentation (the Car Crash demo is quite convincing). Interactive Physics delivers this power to the average Macintosh user-if you can use MacDraw you can use IP. It deserves to find admirers both inside academia and out in the real-world engineering trenches.—Charles Seiter

See Where to Buy or circle 768 on reader service card.

### The simulation engine in Interactive Physics can handle quite

Earthquake!

can handle quite complex experiments. These blocks started from a precarious perch on the base at lower left and will topple to the ground and bounce (you can set the elasticity of the blocks).



### ITS SPEED IS FEROCIOUS. ITS VERSATILITY, UNPRECEDENTED. IT'S UTTERLY PRECISE, ASTONISHINGLY NIMBLE, & INCREDIBLY SMOOTH AT THE HELM.



### THE PLANE'S NOT TOO SHABBY EITHER

Z

It's no accident that the high performance of Canvas™ evokes images of a jet fighter in full flight.

Fact is, its technical drawing power renders Canvas remarkably adept at evoking almost any kind of image you could want.

Over time, this has served to render Canvas's competitors rather speechless. And its reviewers, just the opposite.

A quick tour of its amazing arsenal of weapons helps explain why all the commotion.

Advanced Bezier and spline curves with total editing control. 64,000 dpi accuracy. 16 million-plus colors. Custom rulers, dashed lines, and arrowhead styles. 1/1,000th inch hairlines. Auto object distribution and dimensioning of lines & arcs. Auto tracing of scanned art.

Press-ready 4-color (CMYK) separations, with precision screen angle adjustments and independent color overrides. Flexible EPSF export formats. Importing of MacDraw® I or II files. Smooth text handling and

a 100,000 word onboard spell checker.

The list just goes on, And on. And on.

Yet despite all this technical prowess, Canvas has earned consistent applause for its intuitive design & ease of use.

And, perhaps best of all, for its list price of under \$300.

So, if you're looking for a lot more thrill and a lot less limitation, look into Canvas.

By any measure, it's the only way to fly.

### TRADE UP FOR JUST \$99.

It's also no accident that Canvas reads MacDraw® files. We like to think of this as a noloss invitation to greatness. Simply mail your MacDraw® I or II Master Disk and \$99 (check or full credit card info) to Deneba Software, 3305 N.W. 74th Ave., Miami, FL 33122. Offer expires 5/31/90.

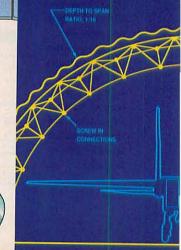
For additional information or the name of your nearest dealer call 1 (800) 6-CANVAS or (305) 594-6965.

1990 Deneba Systems, Inc. Canvas " is a trademark of Deneba Systems Inc., MacDraw\* is a registered trademark of Claris Corporation.



All illustrations were and separated by the

Circle 346 on reader service card





### THE MICROSOFT OFFICE 1.0

Pros: Includes four popular and powerful applications plus many bonus resources; HyperCard shell allows for quick online reference searches. Cons: Printed manuals are not included; multiple levels of menus and documentation may confuse beginners. Company: Microsoft Corporation. Requires: Mac Plus; 2MB RAM; hard disk; CD ROM drive. List price: \$949.



The Microsoft Office is far more than just a Microsoft program delivered on a CD-

ROM disc; it's a package of four of Microsoft's most powerful and most widely used applications tied together with a fancy HyperCard ribbon and decorated with a bevy of miscellaneous tools and toys.

### The Crowded Office

The four Microsoft programs included on the Office CD ROM-Word 4.0a, Excel 2.20a, PowerPoint 2.01b, and Mail 2.0—are functionally identical to their popular floppy-disk counterparts. Why, then, should you consider buying the Microsoft Office package rather than buying the programs separately? For starters, to save money. These four applications purchased separately would cost approximately \$1310 list price; the Microsoft Office lists for \$949. This would be a significant savings in and of itself (if you already own a CD ROM drive), but there's more.

Microsoft has enlisted many other companies to contribute ancillary software to the package. Bonuses include screen fonts from Adobe; a laser-font family from Bitstream; a sampling of clip art in EPS, bitmap, and PowerPoint format from T/Maker, Genigraphics, and Multi-Ad Services; Smart Art DA with six text-manipulation effects; SmartScrap DA; Word Finder thesaurus; DocuComp document comparison software; business templates for Excel from several companies; and a number of other goodies. Limited testrun versions and animated demos of several programs, including Gofer, GeoQuery, and Adobe Illustrator are also tossed into the deal. Finally, the package includes five slick multimedia "introductions" (read, commercials) for the Office and each of its principal applications.

This makes for something of a hodgepodge. To smooth the seams, Microsoft has built a HyperCard shell with a series of hierarchical menus and buttons for navigating quickly between programs. This shell must be installed on a hard disk along with the applications using the Office Installer stack. (While it's technically possible to run the applications directly from the CD ROM, the CD player's slow access time makes that solution less than practical.) You can leave the other Office files on the CD or move them to the hard disk, depending on how often you access them and how much space is available on the hard disk.

### The Paperless Office

No printed documentation comes in the package at all (there is, however, a coupon allowing you to order all the manuals for an additional \$15). The manuals normally packed with Word, Excel, PowerPoint, and Mail have been translated into a series of HyperCard stacks, each of which can be read sequentially like a book or used as a quick-lookup reference. Many sections of the documentation are enhanced with helpful animated sequences.

The powerful search engine built into the Microsoft Office documentation makes it easy to locate references to particular topics in a fraction of the



The Microsoft Office CD ROM and the manuals it replaces

time it would take with a standard set of manuals. In general, the Office's online documentation has a number of thoughtful touches that make it easy to use across applications. On paper, this seems like a great idea. Nobody likes to read manuals anyway, and online help is both more immediate and more flexible. Nevertheless, replacing manuals with online documentation involves some trade-offs, especially for new users of the software.

### You Can't Take It with You

In the first place, you can't take it with you. Secondly, the interactive tutorials (Getting Started with Word, and so on) aren't effective unless you have enough memory to run HyperCard and the application simultaneously under MultiFinder, switching back and forth between the two as you read instructions and carry them out. On a small screen, this constant window swapping quickly becomes tiresome.

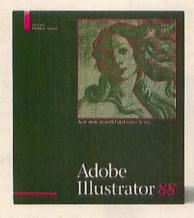
The third trade-off involves the complexity of the Office's overall structure. In spite of Microsoft's efforts to unify the package, the multiple levels and forms of documentation make it easy for new users to feel lost in hyperspace. Inside Word or Excel, for instance, you can use the application's built-in help function. You can return to either application's Office menu screen and browse or search for keywords. If you choose to browse, you have several separate books to choose from. If all of these choices confuse you, you might need to hit the Help button in the Office menu for Office Help. If you still can't find what you're looking for, don't forget the Read Me files that are tucked away in a hierarchy of folders on the CD.

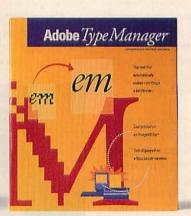
### The Office of the Future?

If you have a CD ROM drive, the Microsoft Office is a superb collection of software at an extremely competitive price, with or without the optional printed manuals. By itself, it's probably not sufficient justification for buying a CD drive unless you're buying software for an officeful of Macs. But if the Office is indicative of the kinds of things that we can expect, the future of CD ROM looks bright indeed.—**George Beekman** 

See Where to Buy for contact information.

# Whats new with Adobe Illustrator 88?





For a limited time, when you buy Adobe Illustrator 88™ software, Adobe Type Manager™ software comes along with it, free. So if you want the drawing program used by professional designers and illustrators, buy it now. While you can also improve your type's screen image—without spending a dime. Call 1-800-344-8335 to find your nearest Adobe Authorized Dealer today.

Because what's new today is gone tomorrow.





# WINDOW SHOPPING

by Lawrence Stevens

This month I review an application that helps maintain an inventory of your possessions and a stack that shows how to protect those possessions from earthquakes. I also look at a stack that will help you learn a foreign language and another that will add spice to your English.

### **Know Your Stuff 2.1**

Many of us live in houses crowded with electronic equipment, hobby paraphernalia, and collections ranging from art to baseball cards—and run one or more part-time businesses to help us pay for all those possessions.

A new Omnis 3-based application, aptly titled Know Your Stuff (\$49.95 from Working Systems), provides an easy-to-use personal and business inventory system.

Most database programs are either so general that they take hours just to learn and then more time to set up, or so specific that they can be used only by, say, real estate sales people. What I like most about Know Your Stuff is that it can be customized for almost any type of list, but it also has enough structure that you can learn it and set it up in about two hours.

First you choose the general categories of stuff that you want to track. These can be as diverse as an inven-



Entering Data in Know Your Stuff
This screen contains both preset and userdefined fields. The Types scrollable field contains
the Type classifications, which you can define
during setup. You can enter a particular Type by
clicking on its abbreviation in that field.



tory of your part-time jewelry business, a detailed list of your collection of rare stamps, and a roster of your Cub Scout den. You designate each category as either single or multiple—the latter being used for lists in which the quantity of each item, such as in a retail business, can vary.

The categories come preset with eight fields (called Labels): Name of Stuff, Type of Stuff, Date, Unit Cost, Location, Description, Last Modified Date, and Time (the last two are entered automatically by the program) (see "Entering Data in Know Your Stuff"). Additionally, multiple categories include Quantity, Total Cost (entered automatically), Max Quantity, and Min Quantity. Virtually all that remains is to create a list of Types such as Appliances or Tools, and to name up to five additional alphanumeric labels, three numeric labels, and one date label.

As with all Omnis-based applications, Know Your Stuff lets you prepare reports using a full range of logical comparisons. You can search for records that contain, equal, or do not equal a set of characters within a specific field or fields. The program also looks at numeric and date fields for data that is lesser or greater than a specific number or that falls within a range. You can also create an Order Report that lists all records where the Quantity is below the Min Quantity.

Know Your Stuff is not without problems. One easily correctable shortcoming is that the manual is too skimpy; it attempts to explain things in a sentence or two when at least a paragraph is needed. A more serious failing is that Know Your Stuff does not print address labels. The program exports (and imports) only in commadelimited fields, so the exported text will not work with most spreadsheets or label software. Of course there are workarounds for this—you can import the list into a word processor and use a global change to replace commas with tabs or returns as needed, but that's an extra step.

If you can get up the ambition to do the input, Know Your Stuff does an excellent job of doing the tracking.

### **Earthquake Preparedness Stack**

The need to keep inventory lists was dramatically demonstrated when California's Loma Prieta earthquake forced many homeowners to tally up their losses for insurance and tax purposes. The Earthquake Preparedness Stack (\$24 from Environmental Compliance Associates) won't help with insurance but can assist in protecting your possessions by explaining everything a layperson needs to know about earthquakes, including information ranging from how earthquakes are formed to how to survive one.

The user interface is as well-conceived as the textual material is informative. You get to any of the six sec-(continues)



Preparing for an Earthquake
The Earthquake Preparedness Stack displays
advice on how to prepare for an earthquake. This
screen provides ways to protect office equipment.

tions—'Quake Basics, How and Where, Changing the Planet, Measuring 'Quakes, Experiencing a 'Quake, and Preparedness & Survival—by clicking on buttons. Each section is made up of one or more cards that display maps, diagrams, or scanned photos malong with explanatory labels and scrollable fields (see "Preparing for an Earthquake").

The most exciting, but probably least informative, section is Experiencing a 'Quake, where, complete with sound effects and animation, you view the crumbling of Stanford University's Main Gate during the 1906 San Francisco earthquake.

The last section, Preparedness & Survival, is the most valuable. You click on any area of a sketch of a house, such as the basement or the attic window, to have the program display a field that describes how to earthquakeproof that area. Or you can view drawings of public places, such as a city street or a classroom, and learn what someone in that area should do during a quake. This section provides some surprising information, including the fact that staying indoors in a downtown area is a good choice (falling glass is a greater potential hazard than the possibility of a building collapsing on you); and if you are on an upper floor of a high rise during an earthquake, expect the building to sway-it is built to do that.

The information here is clear and accurate. The scientific data is about equal to the information you'd find in a good encyclopedia, and the information on preparedness and survival is about what you would see in pamphlets available from state and federal agencies.

If you or your company is located

in earthquake territory, I strongly recommend adding this to your library. It's cheap enough, and 10 percent of the purchase price goes to earthquake relief agencies.

### MacFlash Cards 1.01

MacFlash Cards (\$25 per module from The Language Quest Software Company) is another good example of a HyperCard learning tool; this one is for memorizing foreign-language vocabulary words. Level 1 and Level 2 modules are available for German, French, Spanish, Russian, and Latin. Last month I reviewed another flash card-like vocabulary builder, called VocabuLearn/CE from Penton Overseas, that included an audio cassette and a hard-copy word list. MacFlash Cards provides no audio or hard-copy material, but it gives you more control than VocabuLearn/CE over how you study.

As with standard flash cards, you view an English or foreign word and, after trying to remember the foreign or English equivalent, you can look at the correct answer. You can choose whether the foreign or English word appears first, and you can specify that the cards be displayed in either alphabetical or random order.

MacFlash Cards provides a number of ways to designate certain words for later review. The program can collect all the words you view at each practice session into a Word Set (which you can save to disk). Alternatively, you can select specific words to be placed in a Word Set. Finally, as you go through a practice session, you can mark cards that you have trouble with and later have the program include only those marked entries in your session.

While the marking system could have been the program's strongest feature, it falls short in that you must mark a minimum of 250 cards to have a review session. The program also can't eliminate cards as you learn them, a practice I use with paper flash cards.

One quibble is that the program requires you to use an arrow key to get to the first word card. The developers didn't take into account that many schools, including the one in which I occasionally teach, still have

some older keyboards that lack arrow keys. There are HyperCard work-arounds (#-3, for example), but they are not described on the screen or in the documentation.

Besides one quibble and two shortcomings, MacFlash Cards is an excellent learning tool that, by providing so many ways to view cards, helps you remember the words.

### Slang Thesaurus

When I wasn't studying flash cards during late elementary and early junior high school, one of the things my buddies and I did was try to find dirty words in the classroom dictionary. Of course, none were to be found there, and we had to content ourselves with less exciting, but equally verboten, slang words such as *ain't*. While my lexicographical interests have broadened a bit, perusing Slang Thesaurus (\$35 from Slippery Disks) still fascinates me.

Of course this HyperCard stack contains the standard obscenities and racial epithets that you would expect. But this extensive list also includes slang words and phrases including Yiddishisms; military usage words; and Cockney, Australian, West Indian, and Spanish colloquialisms.

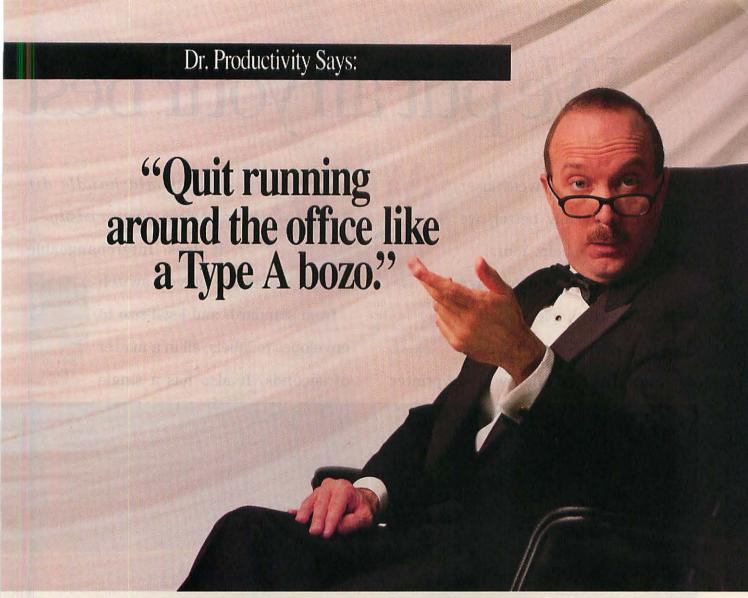
If you like Cockney rhyming slang, you'll find too Irish stew for too true (words of approval) and Uncle Ned for bed. Military slang includes lumpy chicken for gossip and yard bird for recruit.

The HyperCard interface on this stack is fine. Each letter of the alphabet has one or more index cards filled with nonslang words. You click on any of these words to get to a card that contains, in four scrollable fields—Nouns, Adjectives, Verbs, and Adverbs/Phrases—the slang equivalents.

As you view the slang words, you can select, by highlighting, those words that you want placed on a short list for printing. Unfortunately, this short list only contains the slang words, not the nonslang equivalents.

If part of the load of your nine-tofive is to churn out a smoking bit of prose, this stack can fork over a handy leg up.

See Where to Buy er circle 770 (Know Your Stuff), 778 (MacFlash Cards), 801 (Slang Thesaurus) on reader service card.



## "Don't confuse activity with productivity. Get QuickMail.""

"In the time it takes to run across the office (to someone who's not there anyway), you could have E-mailed your question, sent two more messages following up on different projects, answered several pressing questions that were E-mailed to you, then sent correspondence around the world. All without leaving your desk or your application. Ask anyone who's used it: QuickMail is the biggest boost to productivity since fear."

### "Don't settle for hard-to-use mail. No one will use it."

"QuickMail is simple, yet rich. People enjoy using it, so they use it more. Good. Whether you're sending mail around your LAN or around the world, Quick-Mail makes it so fun and easy, people will cut down on time spent playing games, and get some real work done."

## CE Software, 1854 Fuller Road, P.O. Box 65580, West Des Moines, IA 50265 USA. Dr. Productivity and QuickMail are trademarks of CE Software, Inc. All other registered and unregistered trademarks are the sole property of their respective companies.

### "Don't settle for feature-wimpy mail. You'll outgrow it."

"QuickMail gives you true store-andforward technology, real-time conferencing, custom forms, a mail log, wide area
connectivity, access to mail from laptops
or terminal packages, easy-to-use, automated gateways to the public networks
like MCI Mail™, UNIX® mail, AppleLink®
and more. Others talk about gateways.
We've been delivering for months. (Beware of companies with Edsels in their
ads.) You won't outgrow QuickMail.
Apple uses it. NASA uses it. Every
major Macintosh® publication uses it.
You can't go wrong."

### "Want a second opinion? Ask the critics."

"As we said before, CE Software's Quick-Mail is the best electronic mail package on the Mac, and the latest updates have only increased its lead over Microsoft Mail and InBox." MacWeek, 8/8/89

"Rather than exercising 20-20 hindsight, start out with QuickMail." Dave Kosiur, Connections, July-August/89

Circle 338 on reader service card

### "Go to a dealer and try it."

Versions for the Macintosh and PC. Suggested retail price: Version 2.2, 10 user pak: \$499.95 Free literature and Where To Buy: 1-800-523-7638 Dept. CE32.



**CE**SOFTWARE?

# We put all your best

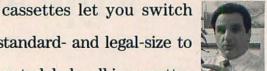
To make our newest laser printer dramatically better, we asked for outside help. Yours.

And the suggestions we received were simple, practical, even beautiful. So, we think, is the result. The NEC Silentwriter 2 printer.

"It should handle different sizes of paper easily." It does. Interchangeable

There's no fuss, from standard- and legal-size to no muss when you replace the single toner cartridge.

envelopes to labels, all in a matter of seconds. It also has a single



Boise, ID. "Paper handling."



# suggestions into a box.

supply toner cartridge that you just pop in, clean and simple.

And as for operating noise? Well, its name speaks for itself.



Holly French San Diego, CA. "Speed and memory."

"Ideally, I'd like a printer that combines lots of speed and memory with good resolution."

> More, faster, better. Our engineers heard it time and time again. So they gave the Silentwriter2 a lightningquick processor and lots of memory. So you can use today's most sophisticated graphics software. For betterlooking brochures, labels and

> > Interchangeable cassettes let you switch document sizes in seconds.

transparencies.

"To have Adobe" Post-Script built in would be key. The more fonts, the better."

We agree. So, the Silentwriter2 290 comes with a built-in PostScript



making it this easy.

interpreter as well as HP<sup>®</sup> LaserJet Plus™ emulation. And we made the Silentwriter2

260 with features like LaserJet II emulation, which supports most standard software. What's more, it's a terrific value—the best in "More fonts."



Scott Hainline

### Specifications

Print Speed: Up to 8 pages per minute

Language: 260: PCL 290: Adobe PostScript, PCL

Interfaces: 260: Parallel, RS 232-C 290: Parallel, RS 232-C, RS 422, Apple Local Talk 260: 8 resident, LaserJet-compatible, optional SilentFontTM cards 290: 35 resident Adobe, PostScript Screen fonts for Macintosh and Microsoft Windows

Standard Memory: 260: 1 MB (expandable to 5) 290: 2 MB (expandable to 4) Resolution: 300 x 300 dpi

its price range. Plus, both are members of the most complete line of personal computers and printers available.

Call 1-800-NEC-INFO today (in Canada, 1-800-343-4418), and check out the Silentwriter 2260 and 290 printers. We think you'll like what you

see. After all, you designed them.

WE'RE MAKING THINGS BETTER FOR YOU.

# World Class Solutions.



If you're looking for world class solutions to all your peripheral needs, ask for Microtech International products. Superior quality and reliability put them in a class by themselves.



MICROTECH

158 Commerce St. East Haven Gl USA 06512

1-800-325-1895 in GT 203-468-6223

Circle 90 on reader service card



# NEW PRODUCTS

### **Edited by Mary Margaret Lewis**

This section covers Macintosh products formally announced but not yet evaluated by Macworld. All prices are suggested retail. Please call vendors for information on availability.

### HARDWARE

### AMIE

Interface emulator that enables the Mac to link to a Unisys/Sperry network. Makes the Mac plug-compatible with the Uniscope terminal network. Hardware supports various forms of connectivity and handles communicationsline protocol. Software emulator is compatible with UTS and SVT terminals. \$1395. Air Land Systems, 703/573-1100.



C21LMAX 21" Flat Screen Monitor

### C21LMAX 21" Flat Screen Monitor

21-inch flat-screen color monitor with tilt-and-swivel base. Adjusts dynamically to horizontal scan frequencies from 48kHz through 96kHz and vertical-frame rates from 60Hz through 80Hz. \$3895. Image Systems, 612/935-1171.



ClearVue/GS and ClearVue/GS30

### ClearVue/GS and ClearVue/GS30

Gray-scale display systems for the Mac II and SE/30. These systems display 256 shades of gray, have a 75Hz refresh rate, and offer hardware Pan and Zoom capability. \$2195 each. Raster-Ops, 408/562-4200.



ComputerEyes/Pro

### ComputerEyes/Pro

Video digitizing system that consists of a NuBus board and bundled software. Captures images from any standard video source; captures either black-and-white or color images with 8 or 24 bits of color information per sample. Supports MacPaint, TIFF, and PICT2 file formats. \$449.95. Digital Vision, 617/329-5400.

### DigiChannel Nu/Xi

Multichannel communications board that works with A/UX to let Mac act as host computer in microproces-



DigiChannel Nu/Xi

sor-based multiuser system. Has Motorola 68000 12MHz microprocessor, 256K of dual-ported RAM, and up to 128K of ROM. Eight-port version \$1295; four-port \$995. DigiBoard, 612/922-8055, 800/344-4273.

### Dynamac SE/30

SE/30 with 2MB, 5MB, or 8MB of RAM that comes with 40MB, 100MB, or 180MB hard drive; built-in 2400-baud data modem; and built-in 4800-baud sending fax modem. CPU is the size of Mac Portable. \$8995. Dynamac Computer Products, 303/296-0606, 800/234-2349.

### **Half Height Drive Series**

Series of 100MB, 200MB, and 250MB half-height disk drives offered as internal and external devices for the Mac SE, SE/30, II, IIx, IIcx, and IIci. Includes backup, optimizer, spooler, and cache software. \$1099 to \$1999. PLI, 415/657-2211.

### JX-600 Commercial Color Scanner

Color scanner scans from 30 dpi to 600 dpi and can zoom from 1200 dpi to 100 dpi. Includes color-separation capabilities. \$14,995.

Sharp Electronics, 201/529-9500, 800/223-2121.



MacBlitz

### MacBlitz

Cocomputer board for the Mac that uses RISC technology to let Macintosh users access machines running UNIX via the standard Mac interface. Has its own memory, UNIX operating system, RISC processor, input/output controller, and can perform simultaneous operation and file sharing with the host computer. Under \$10,000. DuPont, 302/733-9886.

### MacLab/8

Self-contained, software-configurable data-acquisition platform that connects to the Mac and can be used in conjunction with MacLab software packages. Files can be exported to any of the statistical, graph, spread-sheet, and page-layout programs available on the Mac. \$3950. World Precision Instruments, 203/469-8281.

### MacTwin

Hardware-and-software 5250-emulation product that provides local access to an S/3X or AS/400 system from a Mac SE, SE/30, (continues)



MacTwin

or Mac II. Supports up to seven sessions, with one session available for attaching to Mac-compatible printers. SE model \$995; Mac II model series \$1095. Emerald Technology, 206/485-8200.

### NetAxcess

Gateway that gives machines on an AppleTalk network access to IBM AS/400 or System/3X machines. Consists of a NuBus board and HyperCard interface. Provides transparent database access and file transfer to host system for mass storage. \$3995. KMW Systems, 512/338-3000.



NetModem V.32

### NetModem V.32

9600-bps, V.32, and Hayescompatible stand-alone modem for AppleTalk networks. All Macs and PCs on a network can access the NetModem V.32 for outgoing communications. Modem includes dial-in network-access feature to let remote users access the network from a single Macintosh or PC and any other modem. \$1999. Shiva, 617/864-0914.

### **Pentax Desktop Scanner**

Flat-bed scanner emulates Apple scanner. User directly adjusts gamma (gray-scale intensities) while adjusting contrast. Bundled with



**Pentax Desktop Scanner** 

scanning DA that allows user to scan images into any application via Clipboard. Comes with SCSI interface and cable. \$1599. Pentax, 303/460-1600.

### PixelView I and PixelView II

15-inch single-page and 19-inch dual-page display systems. Each comes with monitor, interface board, and necessary cables. Systems have glare-reduction



PixelView I and PixelView II

coatings, 72-dpi resolution, 78Hz refresh rate, and ability to capture screen images to disk. PixelView I \$667; PixelView II \$897. Mirror Technologies, 612/633-4450, 800/654-5294.

### QuaSi

Workstation that uses an SE logic board. Open-ended configuration enclosure allows the use of an 800K drive as well as up to two 3½-inch or 5¼-inch mechanisms for use of hard disk, CD ROM, or tape backups. Comes with full-page monochrome monitor. \$1890. Shreve Systems, 800/227-3971.

# HPoffers you the best things next

From input to output, Hewlett-Packard leads the way. With a full line of Mac-compatible printer and scanner choices.

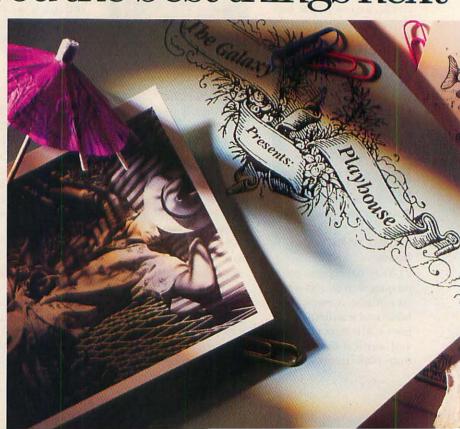
For photographic-quality scanning, there's the HP ScanJet Plus scanner. Combine that with one of HP's high-quality printers. The DeskWriter, the new LaserJet III, the LaserJet IIP, or the LaserJet IID. HP even has color printers. The PaintJet and the PaintWriter XL.

Plus, HP stands behind all their products with exceptional service and support. And a one year warranty. It doesn't get much better than that.

There is a better way.



Circle 288 on reader service card.





**RP88B25 Coprocessor** 

### **RP88B25 Coprocessor**

25MHz coprocessor for Mac II that uses Motorola's 88000 RISC architecture. Has built-in floating-point processor and provides up to 9 MFLOPS and 21 MIPS. \$10,995 to \$18,495 depending on configuration and memory. Tektronix, 503/ 627-7844, 800/835-9433.

### Stowaway 2400

Compact, portable 2400baud modem based on TLP technology; designed to eliminate the possibility of a line being dropped during a communication session due to low battery power. Supports V.22 bis, CCITT, V.22/Bell, 212A/Bell

103 standards, and the extended Hayes AT command set. \$295. Vocal Technologies, 408/980-5181.



SureKey/2

### SureKey/2

Mouse-size lock box (with software) that plugs into any Mac serial port and is used for data security. Can be set to automatically lock at a specified time. Computer can continue to run while locked. \$350. Key Concepts, 219/234-4207.

### SOFTWARE

### **4D Mover**

Software that simplifies

copying objects from one 4th Dimension 2.0 database to another. Lets you move commonly used parts of different databases into new or existing databases to reduce design time. 1MB min. memory. \$200, ACIUS, 408/252-4444.

### Adobe Type Sets 1 and 2

Two font software packages for use with Adobe Type Manager, Each set contains seven display fonts from the Adobe Type Library, To be used with non-PostScript printers. 1MB min. memory. \$99 per set. Adobe Systems, 415/961-4400.

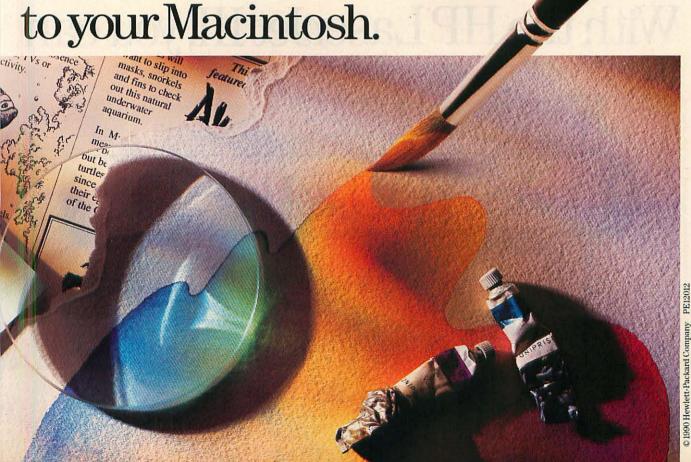
### The AIM Problem Solver

Introductory version of the AIM machine learning tool that synthesizes network solutions from databases of examples. Determines network structure, node types, and coefficients automati-

cally. Allows 25 input variables and has a separate Encode Module to automatically produce royaltyfree networks in ANSI C code. 1MB min. memory. \$495. AbTech Corporation, 804/977-0686.

### CheckFree

Electronic bill-payment service that provides the ability to pay all bills and handle all routine financial tasks electronically, regardless of the financial institution an individual uses. Transmissions to the CheckFree Processing Center are encoded. Payment requests are handled through the Federal Reserve Bank network rather than the consumer's individual bank account. 512KE min. memory. Software kit and manual \$49.95; software kit and quick-refer-(continues)



ence guide \$29.95; monthly service charge for up to 20

service charge for up to 20 transactions \$9. CheckFree Corporation, 614/898-6000.

### **The Contractor Solution**

Business-management software for contractors that provides estimating, job costing, and accounting functions, and includes office-management features such as letter writing, bill paying, and processing paperwork. Program keeps track of whether each job is making or losing money, and keeps up-to-date general ledger entries, calculating 1099 totals and monitoring subcontractor's insurance. 2MB min. memory. \$3995. Vertical Solutions, 805/257-6911.

### DiskDoubler

File-compression utility designed to compress any Mac file that is compatible with MultiFinder. Compresses individual files on a disk maintaining the folder structure; is available at Finder level. 1MB min. memory. \$59.95. Salient, 415/852-9567.

### **Documentor for Psychiatry**

Medical charting program designed to help psychiatrists document cases and create and maintain outpatient charts. Can be used to track and measure patient diagnoses, medications, lab tests, consents and releases, and appointments. Prints prescriptions, reports, and progress notes. 2.5MB min. memory. \$2985. Lanstar, 313/663-6363.

### The Duel: Test Drive II

Driving-simulation program in which the Ferrari and Porsche can compete, or each car can race against a replica of itself. Gives users cockpit perspective. User must be able to shift and steer at speeds exceeding 190 mph in order to avoid crashes, tickets, and blowing an engine. The Duel: Test Drive II Car Disk, California Challenge, and The Supercars add-on software is available. 1MB min. memory. \$54.95. Accolade, 408/985-1700.

### **Electric Design System**

Software for layout and design of analog or digital integrated circuits. Provides for design entry, rules-driven layout, synthesis and analysis tools, and interfaces to other CAE/CAD systems. Supports a variety of design technologies including: MOS, Bipolar, Schematic Design, System Architecture, and a General Artwork facility. 5MB min. memory. \$4900. Electric Editor, 408/441-0710.

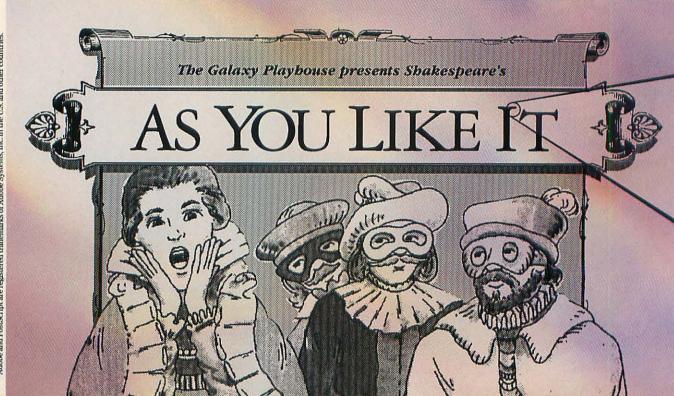
### Flash

Background file-transfer program that runs over AppleTalk-compatible networks. Sends and receives any combination of files and folders simultaneously. Alerts user when files arrive and keeps a record of all file transfers. 1MB min. memory. \$199.95. Beagle Bros, 619/452-5500.

### GolfBase

Personal electronic recordkeeping program for golfers. Automatically adjusts scores using USGA Equitable Stroke Control, computes USGA handicaps, and contains a handicap index; lets user view and print summaries of scoring history for any course and golfer. Program plots and prints histograms and calendars of gross score, adjusted score, handicap differentials, and match re-

# With the HP LaserJet III, you can



by Hewkert-Packard Company PE12010 erif depicted conceptually represents the benefit of variable dot sizes tobe and PostScript are registered trademarks of Adobe Systems, Inc. in the U.S. and other countries sults. Prints completed scorecards. 512K min. memory. \$49.95. Jim Holbrook, 206/641-0352.

### The Grade Machine

Teacher's grade-keeping application that provides full-screen editing of grades in a spreadsheet format, generates progress reports for individual students and summaries for the entire class. Progress reports may be made confidential. Teacher controls grading scales, comments, extra credit, and other preferences. 512K min. memory. Single user \$39.95; site license available. Misty City Software, 206/828-3107.

### How To Use Microsoft Works, Macintosh Version 2

Self-paced learning tutorial that includes four audio disks and a data disk with practice files and an indexed Quick Reference Guide. Designed to help user learn Microsoft Works. 1MB min. memory. \$119. FlipTrack Learning Systems, 800/222-3547.

### HyperEntrepreneur

HyperCard-based program designed to help user learn what it takes to start a small business and to decide whether or not to start one. Includes self-assessment exercises, examples, games and quizzes, and advice on beginning a business. 1MB min. memory. \$285. Hyper Train, 518/834-7203.

### **HyperSource Micro**

Training software that consists of three segments: one for Aldus PageMaker, one for desktop-presentation packages (Aldus Persuasion, CA/Cricket Presents, Letraset USA StandOut, Microsoft PowerPoint, and

Symantec More II), and an examination of Apple's Mac product offerings. 1MB min. memory. \$119. Prism Technologies, 705/674-8254.

### Intuit's IsSpice for Macintosh

Spice program for all Mac platforms; provides universal gateway for circuit designers to perform powerful CAE functions using enhanced version of Spice compatible with Berkeley Spice 2G.6. 1MB min. memory. Professional version \$210; without coprocessor \$95. Intusoft, 213/393-9494.

### KiwiFinder Extender

Tool for organizing hard disk and retrieving files; designed to extend the scope of the Finder. Allows user to view hard disk seven different ways. Files may be arranged by file name, type, creator folder, creation date, modification date, and keywords. 1MB min. memory. \$99.95. Kiwi Software, 805/685-4031.

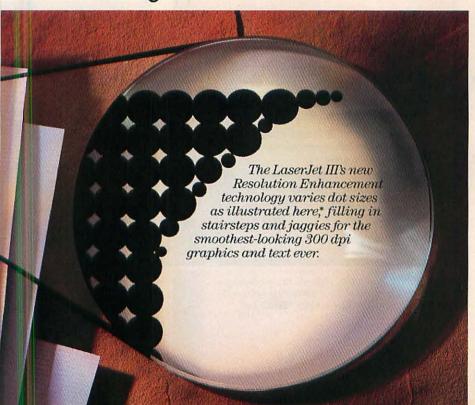


LandCADD Light

### **LandCADD Light**

Software that combines a limited number of functions from various modules of LandCADD landscape-design software. LandCADD Light can be operated as a stand-alone product or in conjunction with any Land-CADD module or any architectural or civil engineering application software. 1MB min. memory. \$695. Land-Cadd, 303/688-8160. (continues)

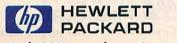
refine your characters.



Introducing the HP LaserJet III printer. With breakthrough technology that delivers the most refined 300 dpi print quality ever. It's easy to use and comes with Adobe' PostScript' and AppleTalk interface. So the LaserJet III is completely compatible with your Macintosh.

HP offers other LaserJets with Adobe PostScript software. The LaserJet IID printer with increased paper-handling capability. And the affordable LaserJet IIP printer. For character-building information and the name of your nearest authorized HP dealer, call 1-800-752-0900, Ext. 1168.

There is a better way.



Circle 299 on reader service card.

### Layouts

Collection of 219 page-layout templates for business cards, brochures, newsletters, and other personal publishing needs. This package includes a quick reference guide, tutorials, and a pictorial index. Has the ability to alter color and typeface and to insert custom logos and other graphics. 1MB min. memory. \$179.95. Starburst Designs, 702/453-3371.

### **Letter Writer Plus**

Business letter software that lets user add graphics or text headers at the top of the page, change the position of a header, and scale graphics just by typing a new scale factor in the dialog box. Can be linked with Power Up's Address Book Plus. 1MB min. memory. \$89.95. Power Up, 415/345-5900.

### LifeArt

Collection of human anatomy clip art to be used for medical publishing, slide production, and two-dimensional animation. Consists of 70 illustrations of the body's major anatomic parts. 1MB min. memory. \$229. TechPool Studios, 216/932-5200.

### MacBible

Multilingual bible concording program with modules available for New International Version, Revised Standard Version, King James Version. Designed for studying biblical texts and their translations. 1MB min. memory. Concording program \$220, each module \$75. Zondervan Electronic Publishing, 616/698-3222, 800/727-7759.

### The Macintosh Yellow Pages

HyperCard-based directory

of all major Mac products including software, hardware, accessories, books, CD ROM titles, and magazines. Contains an index to aid in product searches. 1MB min. memory. \$39.95. The Macintosh Yellow Pages, 617/225-7121.

### MakeTest

Application for teachers and trainers to create test questions and print tests. Stores answers, topics, difficulty levels, and notes with questions; provides variety of printing options. Can be used to create multiplechoice, true-false, essay, matching, and free-form tests. 1MB min. memory. Single user \$149; 5-pack \$399; 10-pack \$699; 20-pack \$999. Mountain Lake Software, 415/665-5302.

### **MacTools Deluxe**

Disk-management utilities

for data recovery, hard disk backup, disk optimization, partitioning file-management, and encryption and password protection of data. 1MB min. memory. \$129. Central Point Software, 503/690-8090.

### MicroCat

HyperCard-based program designed to guide technicians in component-level Mac repair. Lets user point to graphic or text that comes closest to describing the damaged machine and indicates which component is faulty and how to test it. Covers common and uncommon repairs. 1MB min. memory. \$100. Micromat, 415/898-6227.

### **Nastalique Nizami**

Typesetting software for Indo-Iranian languages Urdu and Farsi. Requires a PostScript printer for out-

# With the HP ScanJet Plus, you've

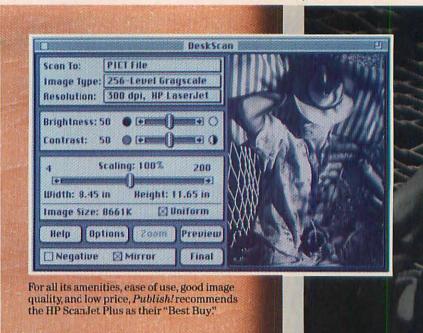
The HP ScanJet Plus scanner provides 8-bit photographic-quality scanning.

That means 256 shades of gray for the hottest-looking output from your Mac. And it's so easy, too. At the click of a mouse, you can get negative or mirror images, as well as scaling in 1% increments from 4-200%. All for \$2,190,\* about what you would expect to pay for a 4-bit scanner.

So if you want the richest, most detailed images from your Mac, you've got it made with Hewlett-Packard. Call 1-800-752-0900, Ext. 1005 for your authorized HP dealer.

There is a better way.





put. 1MB min. memory. Contact vendor for price. Pakistan Data Management Services, 87 D.A.C.H.S., Off Shaheed-e-Millat Road, Karachi, Pakistan.



Partner

### **Partner**

Software that automates the task of creating and editing graphics within a word processed document or publication. Lets user keep all publication data, graphics, and text in one file. 1MB min. memory. \$99. Salient, 415/852-9567.

### **PerfectPartner**

Business-management pro-

gram for the day-to-day operation of small businesses. Captures data about a company's customers, products, employees, and services necessary to prepare sales receipts and project invoices for all transactions as soon as completed. Tallies financial information from receipts and invoices to provide status and payment history. 1MB min. memory. Single copy \$459; volume discounts available. The Process Resource, 508/226-6616.

### **Professional Investor**

HyperCard-based professional portfolio-management software for the Macintosh. Designed for stockbrokers, financial planners, and portfolio managers. Tracks clients, portfolios, and transactions; maintains a history of all transactions for each

client's portfolio; keeps track of each tax lot; and allows for selling partial lots. 1MB min. memory. \$349.95. Balthrop, Brader, Wood Associates, 503/741-2225.

### Professional Output Manager-Desktop PS1

Utility program that functions as a driver for graphics programs to specialized imaging and printing devices. Provides graphics professionals with the ability to preview images via an electronic light box, arrange images in any order, and schedule imaging or output for unattended operation. 1MB min. memory. \$595. Visual Business Systems, 404/956-0325.

### QuickHelp for 4th Dimension

Desk accessory help system for 4th Dimension version 2. This DA contains an entry for every command in the 4th Dimension language and includes a description of the commands, associated commands, manual references, and a complete parameter specification. 1MB min. memory. \$99. After Hours Software, 818/783-5690.

### **Retail Engine Sales Recorder**

Software to record sales for one or more stores. Optional bar-code reader can be used to scan tags with SKU or UPC information. Allows user to define criteria for report searches and sorts. 1MB min, memory. Houlberg Development, 619/287-7444.

### Sauna

Tool for thermal modeling of electronic equipment. Can be used to create thermal models of entire electronic enclosures, circuit (continues)

# got it made in the shades.



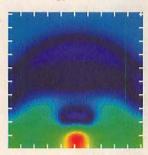
boards or heat sinks, with a solver feature that can predict set of temperatures. 1MB min. memory. Standard version \$995, advanced versions \$2995. Tatum Labs, 313/663-8810.

### **SBT Sales Orders**

Sales-order processing system that generates, schedules, and maintains sales orders and back orders; tracks inventory; and writes sales orders and COD tags. Can be used separately or integrated with the SBT Accounts Receivable and SBT General Ledger modules. 1MB min. memory. \$695. Software Business Technology, 415/331-9900.

### SpeedPlanner

Prepublication planning and production tracking system that yields full pagination for PICT-compatible page-layout programs. Electronically dummies pages; contains ad stack tools for placing ads in predetermined patterns, following specified criteria; and automatically locates ads and stories, placing them onto appropriate page. 1MB min. memory. Preplanning package \$4995; full-pagination package \$8995. Digital Technology, 801/226-2984.



Spyglass Transform

### **Spyglass Transform**

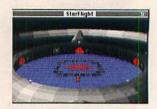
Interactive data-analysis tool designed to convert floating-point numbers into images. Can represent data as simple scaled color images, interpolated images, polar images, or line graphs. Program lets user select part of a generated image and see the corresponding data values. 1MB min. memory. \$395. Spyglass, 217/355-1665.



Spyglass View

### Spyglass View

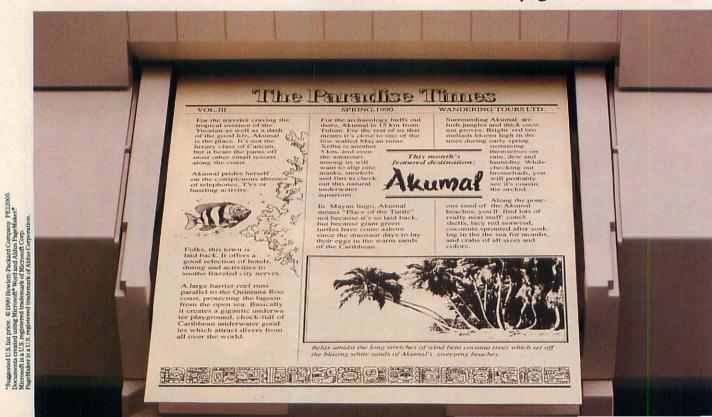
Visualization software that displays color and gray-scale images to represent scientific data. Displays data in a variety of formats such as surface or contour plots, raster images, or dithered images; can show a cross-section of an image as a line graph. Multiple images may be used to create animation. 1MB min. memory. \$395. Educational discount available. Spyglass, 217/355-1665.



### Starflight

Fantasy role-playing adventure game that takes user into a galaxy of 270 star systems and 800 planets. Takes place in the year 4619. The player's mission is to find colonizable worlds, gather minerals and ancient artifacts, and learn the secrets

# With the HP DeskWriter, you can



of alien races. 1MB min. memory. \$49.94. Electronic Arts, 415/571-7171, ext. 541.



StrataFlight

### StrataFlight

Add-on motion-scripting utility that lets users add motion to three-dimensional, 32-bit color images and scenes created with StrataVision. Supports creation of a series of independent PICT files and viewing of both PICS and PICT file formats. 1MB min. memory. \$189. Strata, 801/628-5218.

### **SymbolWorks**

Re-creation of a collection of universally understood interpretative symbols used by designers. Contains





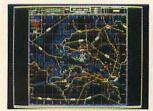


**SymbolWorks** 

more than 120 encapsulated PostScript illustrations for use with page-layout, illustration, and CADD applications capable of importing EPS files. 1MB min. memory. \$99.95. International SymbolSigns Library, 916/442-4045.

### **SyncMaster**

Mac-compatible interface and synchronizer with dual-port design that has two MIDI inputs and six MIDI outputs. Includes SMPTE reader-generator that reads and generates all SMPTE formats. Supports flywheeling, jam sync, and reshaping of SMPTE code. 1MB min. memory. \$349. J. L. Cooper Electronics, 213/306-4131.



**Techbase** 

### **Techbase**

Database-management system for analysis of numeric data sets used in engineering and scientific applications. Relational database lets user add or delete fields and tables at any time. Produces flat, polygon, cell, layer, or block table types. 1MB min. memory. \$2030. Minesoft, 303/292-6449.

### Tracon-Air Traffic Control Simulator

Air-traffic-control simulation re-creates environment of terminal radar approach control centers at various major U.S. airports. Gener-



Tracon-Air Traffic Control Simulator

ates realistic traffic flows from various aircraft types and thousands of possible routes along real airways and radio fixes. 1MB min. memory. \$49.95. Wesson International, 512/328-0100.

### Visual Arts—Publishers Resource

Collection of desktop publishing images. Includes office, food and leisure, flowers, technology, sports, geography, and other types of images. Contains dingbats and page borders. 1MB min. memory. \$250. Electronic Pen, 404/296-8623. (continues)

# have it all. (But keep it to yourself.)



# The HP DeskWriter printer puts laser-quality printing right at your fingertips.

With a small size and a \$1,195\* price tag, the DeskWriter printer easily fits on your desk and in your budget. And its advanced 300 dpi inkjet technology lets you print sparkling text and detailed graphics.

The DeskWriter is also designed for easy use with your Macintosh, and has both serial and Apple Talk interfaces. It even includes scalable and outline fonts. Combine that with the DeskWriter's whisperquiet operation, and keeping it to yourself will be that much easier. So call 1-800-752-0900, Ext. 1004 for your authorized HP dealer.

There is a better way.



Circle 343 on reader service card

### ACCESSORIES

### Archive DiskFile Modular Cube Unit

Cardboard file that holds 75 standard 3<sup>1</sup>/<sub>2</sub>-inch disks. Files fit together in a cardboard sleeve to form a pull-drawer cube. \$7 per file. Weber & Sons, 201/431-1128, 800/225-0044.

### **BNC-Net Series**

Devices to protect from coaxial spike, surge, and interference problems on a network. Available in *tee* or *in-line* configurations. Devices install directly on equipment to be protected. \$60. Electronic Specialists, 508/655-1532.

### **Compuvision Lenses**

Lenses that are designed to block 100 percent of UV light exceeding wavelengths of 400nm, and a major fraction of blue light above 400nm. Glasses are designed to blunt the hazards of UV light, and filtration of blue light improves vision. With frames \$29.95; clip-ons \$19.95. American International Optical Direct, 503/692-8049.



**SideClip** 

### SideClip

Paper holder that attaches to the side of any computer monitor to hold documents for easy viewing. Allows the user to hang papers next to the monitor to prevent neck- and eyestrain caused by constant looking up and down. Holds up to

eight pages at a time and swings out of the way when not in use. Attaches with Velcro. \$6.95. Kensington Microware, 212/475-5200, 800/535-4242.

### Surge

Surge-protection device that provides four-line protection. Device can be used interchangeably for protecting modems, fax machines, fax modems, answering machines, and solid-state telephones on phone lines. Uses metal oxide varistor technology to help protect equipment. \$25. Museum Quality Solutions, 804/474-4939.

### **ZipKit**

Toner recharging kit available for Series I and Series II LaserWriters. Enables user, even one who isn't mechanically inclined, to disassemble, clean, re-



ZipKit

charge, and reassemble cartridge easily. Necessary tools included. \$55. Dart Products, 305/255-8508.

### **BOOKS & VIDEOS**

### **Canned Art**

An 800-page book that includes more than 15,000 samples of commercially available clip art from more than 35 vendors, as well as discount coupons for clip art. Covers a wide range of subject matter including holidays, historical figures, and business images. Coauthored by Erfert Fenton and Christine Morrissett.

Pigments for your imagination.

# HP color printers let you draw splashy color from your Macintosh.

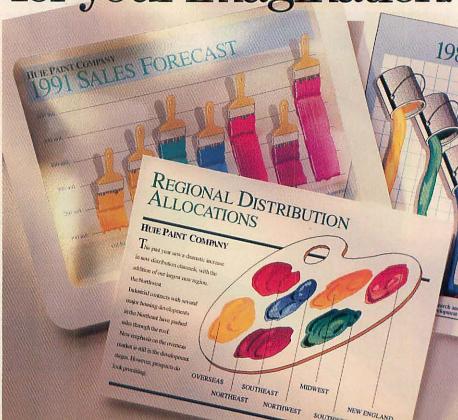
Entertain your thoughts with HP's PaintJet and PaintWriter XL color printers. Both are fully Maccompatible and let you use all Quickdraw-based software applications. That means high-quality Macintosh II output in 16.7 million colors.

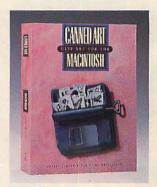
Print on paper or transparencies with 13 scalable outline fonts. And for shared use, the PaintWriter XL offers AppleTalk, faster speed, and auto sheet feed. For sample output and the name of your authorized HP dealer, call 1-800-752-0900, Ext. 1167.

There is a better way.



Circle 301 on reader service card





**Canned Art** 

\$29.95. Peachpit Press, 415/527-8555.

### Computer Assisted Publishing: Digital Pre-Press

Book that explores practical methods to automate publishing in a large corporation using digital prepress. For managers of electronic publishing systems and data-automation centers. Written by David R. Shaw \$42.95. Curvet Press, 613/258-2468.

### Designing and Writing Online Documentation

How-to guide about creating electronic documents that communicate clearly. Teaches how to create menus, messages, hypertext, and help files; discusses the nature of online documentation; and gives a variety of reasons for using online documentation in software design. Written by William Horton. Hardcover \$34.95; softcover \$24.95. William Horton Associates, 205/536-8207.

### Macintosh Repair and Upgrade Secrets

Book that provides repair and upgrade information for all models of Macintosh. Includes reference list of parts for the Macintosh and has instructions for disk drive, RAM, and ROM upgrades and previously undocumented upgrades for power supplies, disk drives, and monitors. Written by Larry Piña. \$32.95. Howard W. Sams & Company, 317/573-2676.

### Mastering Graphics on the Macintosh

Book that focuses on specific software such as MacPaint, MacDraw, and HyperCard and how to use them; emphasis is on design rather than technical details. Written by Dan McNeil. \$21.95. Chilton Book Company, 215/964-4000, 800/345-1214.

### Music and the Macintosh

200-page hands-on guide to Macintosh music software with a discussion of synthesizers, samplers, sequencers, and synchronization. Describes what a user needs to know to begin producing music on the Mac. Written by Gary Yel-

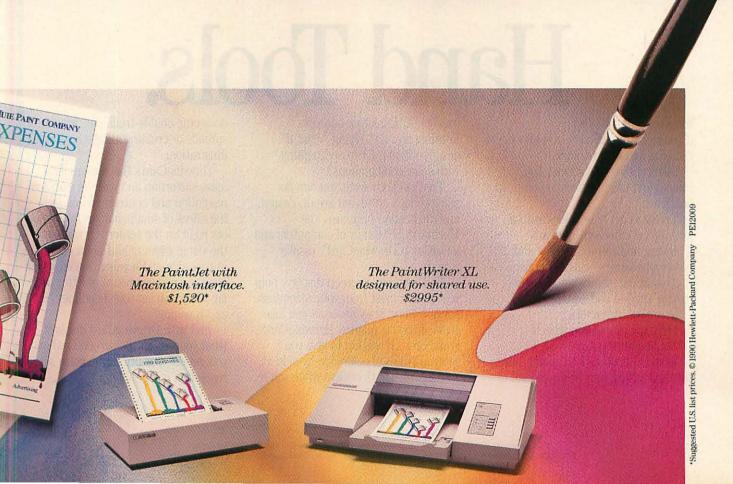
ton. \$16.95. MIDI America, 404/452-8154.

### On Macintosh Programming: Advanced Techniques

Essential Mac programming concepts, source code, and advice from programmer and author Daniel K. Allen. Book details Mac architecture, operating system, QuickDraw, managers that make up the Toolbox, and the Standard Apple Numeric Environment. \$24.95. Addison-Wesley Publishing, 617/944-3700.

To have your product considered for inclusion in *New Products*, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number (and two copies of software) to New Products Editor, *Macworld*, 501 Second St., San Francisco, CA 94107. We reserve the right to edit submissions.

. . . . . . . . . . . . . . . . . . . .





# Hand Tools.

You know what it's like. If you're in graphic arts, you know there's a lot of grunt-work.

Like rubbing-down type. And tracing and filling letters to comp-up headlines.

Trying to get true colors from a junkyard of dried-out markers.

Inking and re-inking rules and borders because of clogged pens.

T-squaring elements to be sure they're aligned and square.

Counting characters.

Spinning proportion wheels.

Tracing off the Lucy.

Wouldn't it be nice to spend more time exercising your brain instead of your wrist? Exploring concepts? Refining layouts? Trying "What if" design options? Or experimenting with color combinations?

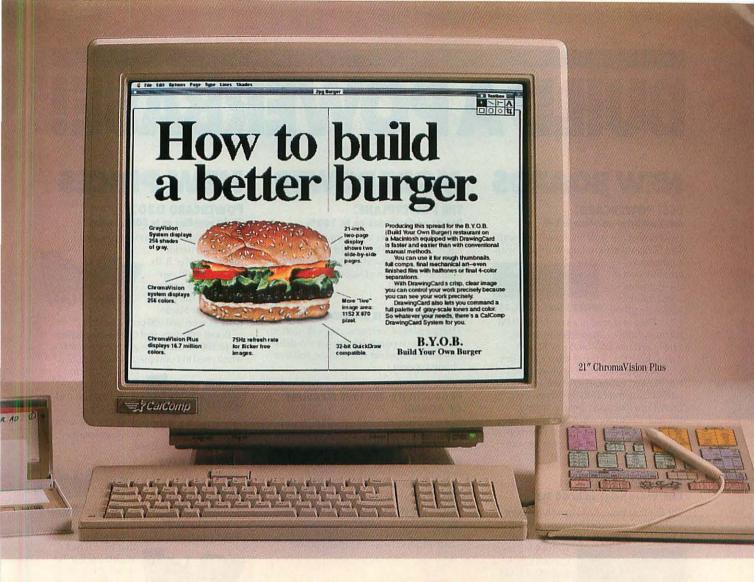
That's exactly what you can do using today's advanced layout, design, and illustration programs, the Macintosh II™ family of computers and a CalComp DrawingCard™ display system.

CalComp large screen displays help you get the most from your Macintosh. For one thing, they never let you lose sight of the big picture. DrawingCard is the first 21" system to give you two full pages of color side-by-side at actual size. That's critical when you're

designing double-truck ads, brochure spreads or creating a large horizontal illustration.

DrawingCard's flat screen eliminates distortion and with its excellent resolution and contrast you can see the effect of small changes in the colors right on the screen. Or evaluate the visual effect of half-point variations in type size and leading. You can even see the precise amount of letter overlap when you set your headlines "tight and touching."

And with DrawingCard displays, what you see on the screen is what you get on your printer because screen resolution is true 72 dpi.



# Power Tools.

There are three DrawingCard systems to choose from. Our 8-bit GrayVision display system with 256 shades of gray is ideal for desktop publishing and design projects using line art and black-and-white halftones.

Our 8-bit ChromaVision system with 256 colors is the perfect match for the great majority of desktop pub-



DrawingCard monitors feature 75Hz refresh rate for flicker-free performance, large live area (1152x870 pixels) and 72dpi screen resolution for true WYSIWYG.

lishing, design and illustration projects where 4-color reproduction is needed.

And our 24-bit ChromaVision Plus system (shown above) with 16.7 million colors is the ultimate display where color accuracy is especially critical such as color retouching.

DrawingCard display systems are just one way CalComp, a worldwide

graphics leader, supports the arts on Macintosh. There's also WIZ,™ a new mouse system that combines the features of a traditional mouse with the power of a graphics pad. Plus a complete line of high-performance printers.

So stop using those antique hand tools today. After all, the graphic arts should be full of inspiration, not perspiration. For more information about DrawingCard displays, call:

1-800-CalComp.

In Canada, call: (416) 635-9010.

Circle 122 on reader service card

We draw on your imagination.™



# BUILDA POWERBASE!

### **NEW BOARDS**

### SCSI POWERCARD.

Cuts Hard Drive wait-time in half.

Hard drives are slow and make you wait. The SCSI PowerCard cuts your wait with a powerful

combination of three proces-



CPU. Data is stored in a fast 1 MB SIMM memory buffer expandable to 16 MB. The board has DMA and a SCSI port that's three times faster than a Mac Ilcx.

SCSI PowerCard makes slow drives run like fast expensive drives. It puts life into optical and CD-ROM drives. Fast drives run like never before. It cuts through database sorts and takes the wait out of saving large files. The more disk intensive the job the greater your payoff.

### RAM POWERCARD. Each board holds up to 64 MB.

For the first time, RAM in a NuBus slot without a cost or performance penalty. Use low cost Mac II style snap-in SIMMs



with 64 MB total capacity. Build a superfast RAM disk with special software that

puts your system file and selected applications into the disk. RAM PowerCard can also be used with virtual memory software that allows you to run more than 8 MB of system RAM without any hard disk "swap space" lag.

### **MORE POWER**

### THE POWERPLANE. **Boosts performance up to 100%**

This board creates a performance shortcut between the PowerCard 030 and the SCSI and RAM PowerCards. It effectively doubles the speed of Nubus and cuts wait time in half.

### OUR TECH STAFF IS SECOND TO NONE.

The promise of technical support is often just words on paper. We are here to deliver - with competent, immediate, toll-free phone support.

### PRODUCTIVITY-THE TRUE MEASURE OF POWER.

DayStar - the pathway to the Mac's ultimate power - the power to increase productivity, to keep pace with ideas, to capture thoughts. You choose the power you need, when and where you need it.

Build your power base with DayStar PowerCards one at a time, two at a time or if you're power hungry, install all of the PowerCards at once.

More work and time for better quality - true productivity - and that's power.

### NEW PRICES

### POWERCARD 030" Works your Mac up to 300% faster.

The affordable, no hassle upgrade to maximum performance for Mac II, IIx, Ilcx and SE/30 owners. Today's applications take the power out of your Macin-



tosh. PowerCard 030 puts it back in.

Boost graphics and CAD performance up to 300%. Database gains exceed 400% when used in combination with a SCSI

Power Card or RAM card.



33 MHz \$1,995

mance to fit every need. We include our

speed-boosting 32K static RAM cache and 68882 math chip as standard equipment.

40 MHz \$2,495

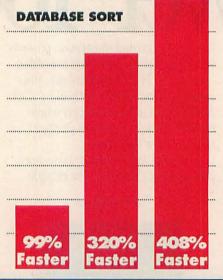
We've been shipping PowerCard 030 for 18 months. In





intosh software and hardware (including your SIMMs).

Installation is easy, with a well illustrated guide. We offer a special socket program for Mac Ilcx owners stranded with a soldered 68030-check it out.



**MAKING BUSINESS MORE PRODUCTIVE** 

D | G | T A L 5556 Alianta Hwy, Flowery Branch, GA 30542. 404-967-2077 Fax 404-967-3018

**Mac II Performance Gains** with DayStar PowerCards

50 MHz

50 MHz

SCSI + SCSI + RAM

Other brands and product names are trademarks or registered trademarks of their respective holders. Prices quoted are domestic USA. Product specifications are subject to change without notice. @1990 DayStar Digital, Inc. All performance increases relative to the performance of a stock Mac II. This ad with prepress created on a Macintosh II and IIcx with the DayStar 50MHz PowerCard 030.

> Available exclusively through dealers and value-added resellers. CALL 1-800-962-2077

# Quick Tips

HIGH-DENSITY DISKS, PRINTING BITMAPPED IMAGES, SE/30 STRATEGIES, AND MORE

BY LON POOLE

an you name three differences between 1.44MB (high-density) floppy disks and 800K (regular) disks? Too many people think there are only two significant differences: price, and that extra little hole opposite the write-protect hole. In

an attempt to cut costs, these foolish people cut an extra hole in an 800K disk and then initialize it as a 1.44MB disk. I'm not going to tell you where to buy the hole punch that makes the conversion, because I wouldn't be doing you any favor.

The third and most important difference between 1.44MB disks and 800K disks is the coating that magnetically stores your programs and documents. The magnetic bits in the coating of a 1.44MB disk resist demagnetization more strongly than the magnetic bits on an 800K disk do. (A disk's ability to resist demagnetization is expressed in terms of *coercivity*, which is measured in oersteds. The coercivity of an 800K disk is 600 oersteds, whereas the coercivity of a 1.44MB disk is 720 oersteds.)

A 1.44MB disk must resist demagnetization more strongly than an 800K disk because initializing at the higher capacity packs the magnetic bits in the disk's coating closer together. When you initialize an 800K disk at 1.44MB, its magnetic bits may eventually demagnetize each other. "You might start seeing data loss in a month's time," says Dick Clark, a training specialist at disk maker Dysan. He also warns that hopped-up disks are more susceptible to external magnetic fields. "A magnetic paper-clip dispenser with a paper clip sticking out the top has a strong enough magnetic field to affect

a disk leaning against it," he says.

If you need 1.44MB disks, buy the real thing.

### **Early Warning**

A tip published last December suggested tearing off the last 50 sheets of a box of fanfold paper to serve as an early warning. To Don Hauser of Brea, California, this provides an upset stomach to replace a headache (to quote an old ad). What if you are in the middle of a printing job when you arrive at your "early warning system"? Instead, Hauser suggests marking with a red marker in the tear-off margin of the paper at the point where you wish to be alerted. That way, there is no interruption—just a bright red alert.

### **Printing outside Crop Marks**

The tip in January showing how to print a job ID outside the crop marks of a PageMaker document is somewhat misleading. The screen illustrating the tip shows a text block being created on a master page. However, this text will not print on the regular pages, asserts Jo Ellen Ackerman of Cliffside Park, New Jersey. PageMaker sees this text as being on the pasteboard, not on the page.

Ackerman's solution is to create the job ID as a graphic using any drawing or painting program. Alternatively, you can type the job ID in PageMaker, copy it, paste it into the Scrapbook,



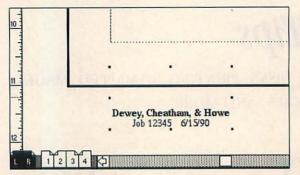
and use PageMaker's Place command (in the File menu) to convert the text to a graphic. If you're putting the graphic at the bottom of the page, be sure to include blank space at the top of the graphic. If you're putting the graphic at the top of the page, include blank space at the bottom of the graphic. Place the graphic on the master pages with the blank space on the page and the job information hanging off the page, as shown in "Job Info." The graphic will print on all pages where master items are showing.

### **Best Bitmaps**

Bitmapped (paint) graphics don't always look their best when printed on a LaserWriter. They're created by HyperCard and by paint-style graphics applications at 72 dots per inch. Those dots are 4.1666667 times larger than the dots a LaserWriter uses to print the bitmapped graphics at 300 dpi. Because that's not an even ratio, bitmapped graphics can look lumpy on a LaserWriter. However, reducing the printed image by 4 percent (using (continues)







Job Info

To print text outside the crop marks of a PageMaker publication, create a graphic that contains the text and position it as shown here.

Precision Bitmap Alignment) makes the screen dots exactly 4 times larger than LaserWriter dots and eliminates the lumpy quality.

So when using a LaserWriter to print any document that includes bitmapped graphics, choose Page Setup from the File menu, click its Option button, and set the Precision Bitmap Alignment option. Or you can enter 96 as the Reduce or Enlarge option of the Page Setup command.

Instead of reducing the whole document, you may be able to reduce

just the bitmapped graphics to 96 percent. A graphic pasted into Microsoft Word, for example, can be reduced by pressing the Shift key and dragging the handle in the lower-right corner of the graphic. The percent reduction is reported in the lower-

left corner of the document window as you drag.

The more you reduce an image, the sharper the output. (Remember to start out with a large enough original so that you won't end up with an image that's too tiny.) When printing on an ImageWriter I or II, reduce to 50 percent. The best reduction amounts for a LaserWriter are 75, 50, or 25 percent when you set the Precision Bitmap Alignment option as well. If you don't set that option, then reduce to 72, 48, or 24. You can either scale individual graphics to these sizes or use the Page Setup command to reduce the whole document. (Exception: (continues)





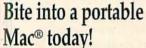


Reduced Bitmaps

Get sharper bitmapped graphics on a LaserWriter by reducing them to 75 percent (top), 50 percent (middle), or 25 percent (bottom) with the Precision Bitmap Alignment option set.

# Portable Macintosh To Go.





There's only one place where you can pick and choose from an appetizing selection of portable Macintosh® computers — at Dynamac Computer Products. Here's what you'll find on our expanded takeout menu.

• The Apple<sup>®</sup> Macintosh Portable\*, the newest addition to our portable menu, with 2 megabytes of RAM, 40 megabyte hard drive, crisp 640 x 400 active matrix LCD, 16 mhz 68000 processor, 2400 baud modem, FAX modem, 6 to 12 hour battery life, extra battery, recharger and carrying case.



Authorized Value Added Reseller

• The Dynamac SE/30\*\*, a powerful portable workstation with an Apple Macintosh SE/30 logic board, 2-8 megabytes of RAM, 40 to 200 megabyte hard drive, bright 640 x 400 EL display, 16 mhz 68030 processor, 2400 baud modem, FAX modem, 68882 math co-processor, support for all Apple monitors (including color), SE/30 DirectSlot and carrying case. 110-250 volts AC.

There's enough choice to whet the most power hungry Mac user's appetite: Dynamac's portable Macs come in ten models, and we'll even upgrade your portable's RAM or hard drive as your needs grow.

## Look at what you get on the side.

When you purchase your Mac to go from Dynamac, you'll also get a lot of other special benefits that you won't find anywhere else.

**30-day money back guarantee.** No kidding. No questions.



One-year warranty on all portable Macs we sell — including the new Macintosh Portable. Available only from Dynamac.

Dynamac CreditPlan, a monthly payment program that lets companies take up to five years to pay, with minimal paperwork.

Easy upgrade program that lets you start with any portable we sell and upgrade to a larger hard disk or more RAM.

Portable Macintosh right away. Portable Macintosh computers are available now. Order today and you can be unpacking tomorrow!

Nationwide service. If there's ever a problem, we'll Fed Ex your Dynamac or Macintosh Portable both ways and repair it within 24 hours. Portable peripherals that enhance your mobile workstation, including portable printers, scanners and fax modems, are available for immediate shipment.

Sharp Wizard & MindShare™ software.
When you purchase any portable Mac from us, you'll also get the Sharp Wizard electronic organizer and connecting cable, and MindShare software that manages your tasks, appointments, contacts and business correspondence — and talks to your Sharp Wizard.

Getting hungry for a Macintosh when you're on the go? Talk to the company that gives you more options and more support.

Call Dynamac today at 1-800-234-2349.



Dynamac. First in Mac portables.

\*Dynamac sells only fully configured Macintosh Portables. \*\*Dynamac SE/30 available upon FCC approval. Apple, Macintosh and Mac are registered trademarks of Apple Computer, Inc.

Dynamac is a registered trademark of Dynamac Computer Products, Inc. Other products and brand names are trademarks of their respective holders.

### HOW TO

you can't set a 24 percent reduction using Page Setup. You have to set the reduction to 25 percent and check Precision Bitmap Alignment.)

At any of these reductions none of the dots that make up the bit-mapped graphics are lost; they are simply condensed into a smaller area. For example, reducing by 50 percent effectively increases the resolution of bitmapped graphics from 72 dots per inch to 144 dots per inch. The more dots per inch, the finer the detail of the printed

image. "Reduced Bitmaps" illustrates the kind of improvement you can get.

Unfortunately, some patterns in bitmapped images reduce poorly: the dots clump together when the patterns are reduced. Jean-Jacques Greif of Paris, France, suggests using sparser or coarser patterns if you know in advance that you're going to reduce the picture. For example, use a light gray pattern for the desktop instead of the standard medium gray, as shown in "Reduced Desktop Grays." Also, he recommends you turn off the Page

Setup command's Graphics Smoothing option. When you're reducing with smoothing on, thin white lines and inverted (white) text can be overwhelmed by dark backgrounds.

### **Change Standard Application Font**

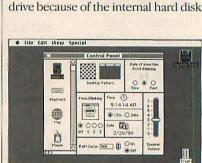
Is there a way to change the standard font in an application? I am using Adobe Type Manager and would like to designate one of my outline fonts as the standard font.

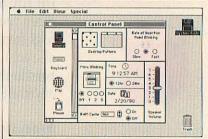
Marc Berezin Soldotna, Alaska

A The factory setting for the standard application font is Geneva. You can change it using the Font List module of MasterJuggler from ALSoft (713/353-4090). Most application programs use the standard application font in new documents unless you change it using the Font menu or an equivalent, but not all do. Microsoft Word, for example, uses New York. To change the standard font in Word, use the Define Styles command (from the Format menu) to change the Normal style, and click the Set Default button.

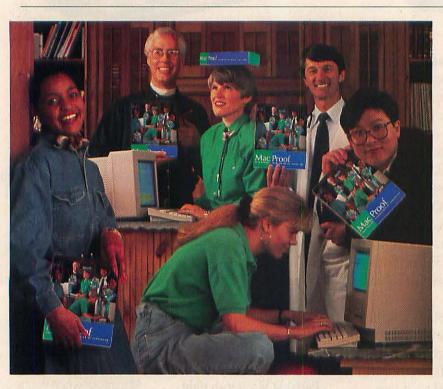
### SE/30 Enthusiast

When I discovered the small price difference between the SE and the SE/30 I became enthused about the latter. I have a few questions, though. Is there only one internal floppy disk drive because of the internal band disk





Reduced Desktop Grays
A light gray desktop pattern doesn't turn black
when reduced to 25 percent.



### MacProof. The People's Choice for Better Writing.

AT LAST.

PERFECT PROPOSALS,

PROFESSIONAL LETTERS

AND POLISHED TERM

PAPERS.

Grin the wicked grin of confidence. Get to the point. Organize. Never worry about mistakes in spelling or usage.

MacProof is an easy-to-use, totally interactive desk accessory. Whether it's a term paper or a business proposal, a letter or manual, a sermon or a speech, MacProof can help you refine your writing until it's letter perfect. MacProof. Proofreading and text-revision software for the Macintosh by Lexpertise. Now for only \$195.00 (suggested retail price). PC Proof available for IBM and compatibles. For more information, contact your local dealer or call toll free 1-800-354-5656.

Requires 1MB of memory, Format compatible with: MacWrite 4.6 and 5.0, MacWrite II 1.0, Microsoft Word 4.0, MindWrite 1.10 and 2.0, PageMaker 3.0, (Requires 2MB for PageMaker). Check with Lespenise for further information on product compatibility. Trademarks belong to their respective manufacturers.

drive, or because of space limitations? I'd like an SE/30 with two internal floppy drives. Also, how much of the software I use on my Plus will be compatible? Lastly, I'm trying to find a board for the SE/30 that sends composite NTSC signals to my color TV.

Ryan Rasmussen Monticello, Minnesota

A I assume you plan to use an external hard disk with the SE/30. You won't notice the machine's high performance much if you saddle it with just a couple of floppies. That's probably why Apple designed it for just one internal floppy. There's room inside for a second floppy drive (in place of an internal hard disk), but the cabinet has only one opening for floppy disks. You'd have to perform major surgery to get a second floppy drive in an SE/30. However, you can connect an external floppy drive.

Software compatibility prospects

are excellent if you're using software published in the last year and a half. When Apple introduced the SE/30, the company tested over 100 popular application programs and found that 95 percent were compatible. Since then, the other 5 percent have probably been revised to work with the SE/30.

The SE/30 is color-ready. Several manufacturers, including RasterOps (408/562-4200) and SuperMac Technology (408/245-2202), make video adapter boards that output the same color signal as a Mac II. I don't know of any SE/30 video adapters with NTSC output, but you can use a regular SE/30 video adapter with an external NTSC converter designed for standard Mac II color video, such as the NTSC Converter from Julian Systems (415/ 686-4400) or the RGB/Videolink 600 from RGB Technology (415/848-0180). For more information, see "Mac TV Tools," Macworld, September 1989. (continues)

### SPIRAL TEXT

The hard part of creating spiral text in Aldus FreeHand 2.0 is constructing a spiral path. These instructions show one technique. (This tip was contributed by Giovanni Gotti, of Dongo, Switzerland.)



Draw a circle and use the Ungroup command (Element menu) to ungroup it. Next draw and ungroup three or more additional circles, decreasing the radius of each by the same amount. (The Snap To grid can be helpful here.) Then align the circles as shown.



Using the Knife tool, cut each circle in half at the points indicated. Then remove the half-circles you don't need.



Working from the outside in, select the remaining half-circles two at a time and join them using the Join Elements command (special submenu of the Elements menu).



First select your text, then select the spiral and use the Join Elements command to bind the text along the spiral path.



Circle 145 on reader service card.

# MEET YOUR NEW MIS DEPARTMENT



Apple and IBM are registered trademarks of their respective owners.

Tomorrow's leaders are being shaped by two of the most powerful forces in America today. Computers and You.

In an unprecedented way, the computer industry is bringing technology and learning to neighborhoods more commonly associated with hardship than hardware. In San Francisco's Tenderloin, kids have given up graffiti to study PC architecture, graphics and desktop publishing. They work in a learning center equipped with Apple® computers and IBM® PC-compatible systems, as well as an impressive and growing software library, all provided through donations. And they're learning from volunteer instructors like David Bunnell and Adam Osborne.

The goal of Computers and You is to make a difference through technology. And it's working. By the end of the first quarter, students had already found jobs. For some, their first ever. And it doesn't stop with the Tenderloin. Our vision is to fully develop the San Francisco center and then recreate it in cities across the U.S.

A donation of equipment, time and especially money from you or your company can help make this vision a reality. To find out how, call us at (415) 922-7593. Computers and You, 330 Ellis St., 6th Fl., San Francisco, CA 94102.



A Nonprofit Community Learning Center at Glide Memorial Church

### Signature Font

Is there a way to download cursive signatures into a LaserWriter IINTX? We want to cut down printing time when we print form letters. It seems to us that downloading the signatures before beginning the print job would quite radically decrease the formatting time in the printer. Presently we scan our signatures as EPS files and paste them into our letters.

J. Michael Yeager Henry J. Urbanek Waterford, Connecticut

A The Art Importer from Altsys (214/424-4888) creates PostScript fonts that contain artwork instead of letters, punctuation marks, digits, and so on. For example, you could create a font that has your cursive signature where Times has the letter A. You could then insert your signature by choosing your special font and typing an A. Instead of displaying an A, the Mac displays your signature. Using an art font is a lot like using the Symbol font.

The Art Importer accepts EPS and PICT drawings, but doesn't accept bitmapped images. Scanned images are bitmapped, although they may be saved as PICT or EPS files. To use a scanned image with The Art Importer, you must first convert it to an EPS or PICT drawing by tracing. Both Adobe Illustrator and Aldus FreeHand have automatic tracing features that do most of the work for you.

### **MultiFinder on Demand**

I'd like to use MultiFinder on demand by double-clicking on its icon, as described in last February's *State of the Mac* column. How do you move the icon to the desktop so it is accessible at any time? Nothing I have tried moves it from its menu location.

W. Scott Champney Johnson City, Tennessee

A Open the System Folder, locate the MultiFinder icon, and drag the icon out of the folder. You can put it anywhere on the desktop. If MultiFinder is active when you move its icon, you can temporarily inactivate it by restarting the Mac and holding down the # key from the time you see the Welcome to Macintosh message until the

Finder's menu titles appear. If you want MultiFinder always inactive, use the Set Startup command in the Finder's Special menu to set the Finder option, and then restart. You can activate MultiFinder without restarting the Mac by holding down the # and Option keys while double-clicking the MultiFinder icon. Once MultiFinder is active, double-clicking on its icon results in a message advising that it couldn't be opened because it's busy.

You know MultiFinder is active when you see a miniature icon in the upper-right corner of the menu bar. Also, About MultiFinder appears at the bottom of the Apple Menu.

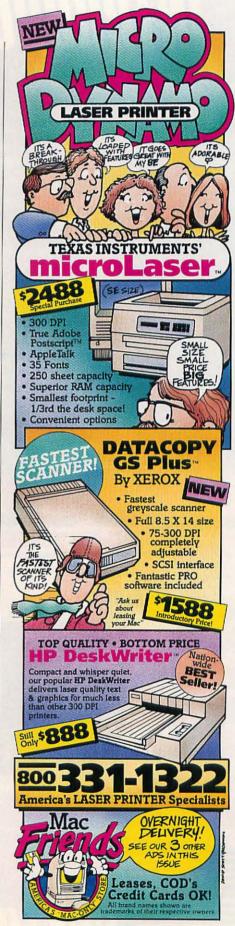
### **PC Display on Compact Mac**

TIP: SoftPC from Insignia (415/771-7001) works very well for running MS-DOS programs on a Mac II, SE/30, or accelerated SE. However, a compact Mac's 9-inch monitor doesn't display IBM graphics satisfactorily. The solution is to use Stepping Out II, a Control Panel device from Berkeley Systems (415/540-5536) that lets you work on a bigger screen area than your monitor can display at once. (You pan across the big screen area by moving the pointer to the edge of the screen.) Set Stepping Out II for a standard Mac II screen size (640 by 480 pixels) and enlarge the SoftPC window by clicking its zoom box.

John Willis Frederick, Maryland

We pay from \$25 to \$100 for tips published here. Send tips or questions (with your address and phone number) to Quick Tips, Macworld, 501 Second St., San Francisco, CA 94107. Send electronic mail to CompuServe (70370,702) or MCI Mail (294-8078). All published submissions become the property of Macworld. □

Lon Poole answers readers' questions and selects their tips for this monthly column. He has written many personal computer books, most recently the quick reference HyperTalk (Microsoft Press, 1988), and has just finished a new book of Mac tips (to be published this summer by Microsoft Press), Amazing Mac Facts.



Circle 270 on reader service card.

# INTRODUCING NEW DISKLOCK

Unbreakable password protection for the Macintosh

It's sad but true. All it takes is a few minutes with your back turned, and an intruder could walk away with your most confidential data. And you'd never even know it!

### Unsurpassed Password Protection

Now the leader in hard disk security announces the ultimate data protection system for your Macintosh. **DiskLock** works with any SCSI hard disk to provide foolproof password protection for individual files, folders, or your entire hard disk. You can even protect all three levels with different passwords for absolute maximum security. **DiskLock** automatically locks your files when you shut down or leave your Mac unattended, and alerts you to any unauthorized access attempts.

Dealers Circle 245 on Reader Service Card

Sophisticated Data Encryption
State-of-the-art data encryption adds
yet another layer of security. Without
the proper password, your confidential
files appear to contain nothing but
gobbledygook!

Multiple Security Levels.\*

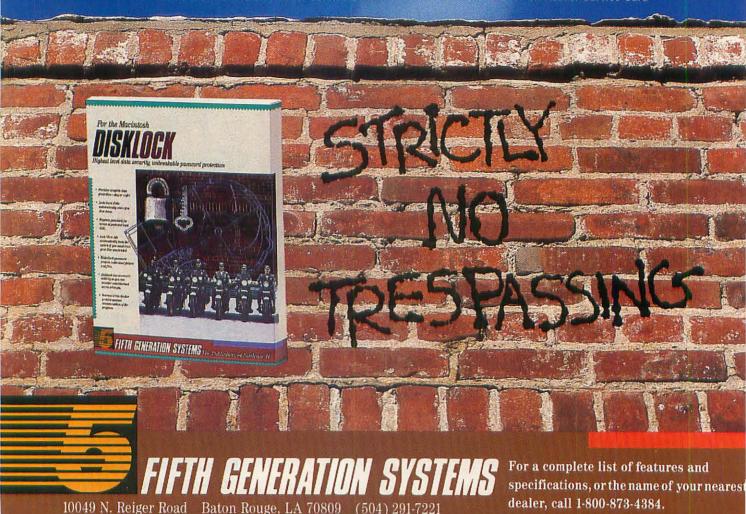
DiskLock lets you give each user password access to just the files you choose (word processing files for your secretary, accounting files for your bookkeeper, etc.). The master password

gives you access to all files and folders.

Virus Protection, too!

If DiskLock's automatic virus checker detects an infection when you log in to a file, it notifies you and stops running immediately.

End Users Circle 247 on Reader Service Card





# Getting Started with Virus Protection

From Prevention to Cure, an introduction to avoiding DIGITAL INFECTION

ave you had any viruses lately? I refer not

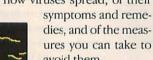
to the cold-and-flu variety, but to computer viruses, programs that invade the Mac and slow its performance, cause system errors, or—at their most evil—destroy applications and documents.

The term virus implies a natural entity that you can't help but pick up now and then, like a cold. The truth is, computer viruses are tools of vandalism-they're bricks heaved through your Mac's windows by people with apparently nothing better to do with their time and programming skill. No

you do? First, don't lose any sleep over viruses. They exist, but your chances of being victimized by one are small, especially if your Mac isn't on a network and you don't swap software with other users. Second, be preparedjust in case. Arm yourself with knowledge of how viruses spread, of their

BY JIM HEID

dies, and of the measures you can take to avoid them.





Some of the technical concepts behind viruses have been around for decades. but the first microcomputer viruses appear to have been created in 1983 by

Frank Cohen, a University of Cincinnati professor who was researching his doctoral thesis on computer security. Cohen's viruses were created under controlled conditions; none reached the outside world. Interviewed in 1988, when viruses enjoyed a burst of media attention, he admitted to being reluctant to publish his findings, but did so to warn the world of the virus threat. "I had planned to devote my thesis to ways to defend against viruses," he said. "Instead, I used it to prove that you can't defend against them."

Viruses are difficult to fight because they're designed to spread. A virus contains software instructions that enable it to copy itself into legitimate files, called bosts. Some viruses infect only application files, while others invade documents or the Mac's system files. Still others begin by infecting a system file and then copy themselves to uninfected applications.

Most viruses spread when you copy an infected file from one Mac to another, although some spread simply when you insert an infected floppy disk. Now imagine millions of Mac users exchanging files through user groups, office and university networks, and online bulletin boards and information services-the propagation possibilities are endless. Last year, a new virus was discovered in Belgium in early December; by Christmas, it had spread throughout the United States.

A virus doesn't just replicate itself, it also inflicts its own unique symptoms on the machines it infects. Viruses can be malicious or mischievous. A malicious virus might deliberately damage applications, cause system errors, or erase files on a hard disk. A (continues)



cures exist for the viruses that cause colds, but computer viruses could be stopped dead if their creators turned their energies toward being productive, not destructive.

But then, so could war, crime, and pollution. And like them, viruses will be around for some time. What can

### **GETTING STARTED**

### HOW TO

mischievous virus might simply display a message or joke at a predetermined time; its creator is out to soap your windows, not smash them. To date, most Macintosh viruses have fallen into this second category.

But even a mischievous virus can be trouble. It might cause a system error by trying to use memory or resources that a legitimate program is already using. Its programmer may not have tested it thoroughly, or it might conflict with your Mac's combination of hardware and start-up documents (INITs). The bottom line: There's no such thing as a benign virus.

### **Names and Strains**

Most Mac viruses have odd-sounding names—nVIR, Hpat, INIT29—that reflect the technical makeup of the virus's software. Some viruses earn more pronounceable monikers, like the "Peace" virus, set loose by an attention-hungry editor of a Canadian Mac magazine. It was designed to display a "universal message of peace" on March 2, 1988, and then erase itself. Its victims—including Aldus Corporation, which inadvertently shipped a few thousand infected copies of Free-Hand—didn't find the medium appropriate to the message.

Now and then a new strain of an existing virus appears. That's been the case with the nVIR virus, whose original program code was once posted on a computer bulletin board in an attempt to aid creators of antivirus software. It may have helped them, but it also gave budding virus creators a head start in creating new strains.

"Field Guide to Viruses" lists the names and symptoms of the viruses that have been identified as of late February.

### Is Your Mac at Risk?

Generally, the more Macs your machine comes in contact with, the greater the risk of infection. Consider yourself at risk if any of the following describe you.

• You swap programs, HyperCard stacks, or disks with other Mac users. Even an erased disk can carry the WDEF virus if you erase the disk by dragging its contents to the Trash. If a friend hands you a blank disk to fill with your latest shareware finds, be sure the disk was erased using the Finder's Erase Disk command before you insert it into your Mac.

Virus Name	Nature of Infection	Symptoms	Comments
ANTI	Infects applications only (including the Finder), not other system files or documents.	May cause crashes due to its poor programming.	Disinfected applications aren't identical to original, but generally still run. Best approach is to replace infected application with an uninfected copy from its master disk.
INIT 29	Infects any file (document or application) containing resources. Spreads only via applications and system files.	Its poor coding may cause printing problems, INIT conflicts, and MultiFinder crashes. If you insert a locked floppy disk, a dialog box appears saying the disk needs repairs. Normally, this dialog box-doesn't appear with locked disks.	INIT 29 can spread very rapidly because it infects unlocked floppies as soon as they are inserted.
nVIR (strains "A" and "B")	Infects System file first, adding code that subsequently infects each application you run. Finder and DA Handler files usually become infected.	System crashes. Files may disappear. Mac may beep when applications are started. "B" strain causes Mac to say "Don't panio" if System Folder contains the Macintalk file. Otherwise, you may hear random system beeps.	The original program code for nVIR was posted on some bulletin boards and information services. As result, several "clones" have appeared: Hpat, nFLU AIDS, MEV#, and F*** (whose actual name can't be printed here). Their symptoms are generally the same.
Peace (also called MacMag, Drew, and Brandow)	Infects System file.	"A message of peace" appeared on March 2, 1988; virus then destroyed itself.	Rare these days, but still could be encountered on old disks.
Scores	Infects System file first, lies dormant for two days, then searches for and infects a new application at 31/2-minute intervals.  Adds invisible files called Scores and  Desktop_ (the _ character represents a space) to System Folder.	System crashes; printing problems. Miscellaneous problems with MacDraw and Microsoft Excel. May cause "insufficient memory" messages. Increases size of files it infects by 7K. Notepad and Scrapbook files may have generic document icons (dog-eared page).	System 6.0.4's System file is irreparably damaged and must be replaced with an uninfected copy from its master disk.
WDEF (strains "A" and "B")	Infects only the invisible DeskTop file contained on all floppy and hard disks.  Spreads rapidly through the sharing of floppy disks.	Slows performance. Significantly slows performance of AppleShare server. Crashes Mac Ilci and Portable. "B" strain causes Mac to beep each time a DeskTop file is infected.	You can remove this virus from an infected disk by rebuilding its DeskTop file; Press # and Option while inserting the disk. (For hard disks, restart and hold down # and Option.) To avoid infecting a AppleShare server, do not grant "make changes" privilege to the server's root directory (desktop level).

- You download programs and Hyper-Card stacks from bulletin boards or information services. Most bulletin boards and information services check incoming files for viruses before making them available to subscribers, but a new virus can slip through undetected if the service's virus-detection software can't recognize it.
- You're connected to other Macs on a network. A network is an ideal transmission medium for viruses, especially if several users access applications stored on a file server.
- You use a desktop publishing service bureau or university laser-printer center. Some service bureaus have been criticized for taking a cavalier attitude toward virus checking and prevention. If you use a bureau or central printing station regularly, look into its virus-prevention measures.

### **How to Protect Yourself**

If you don't fall into the preceding categories, you aren't immune from viruses, but the threat is minimal. Whether or not you're in the high-risk group, here's how to protect yourself.

- Lock floppy disks whenever possible. A virus can't infect a locked disk. Always lock the original master disks of an application before inserting them; you'll need virus-free masters in case one of your programs gets infected. To lock a disk, slide its plastic write-protect tab so you can see through the square hole. If you don't have a hard disk, it won't be possible to work with locked floppies. Your best defense is to do the following.
- Back up religiously. If the worst happens, you'll have something to fall back on—unless the backups are infected, too. To avoid that, keep at least two sets of alternate backups made at different times. Don't neglect to back up the files in your System Folder, too; most viruses attack them first, and by having a backup, you won't have to laboriously reinstall your favorite fonts and desk accessories. (See this March's *Getting Started* for tips on backing up.)
- Be wary of a new freeware or shareware program. Instead of trustingly copying it to your hard disk, run the program from a floppy first and watch for abnormal behavior, such as sys-

tem crashes or significantly slowed performance. Use the Control Panel or Alarm Clock desk accessory to change the Mac's date setting, then run the program again; some viruses lie dormant until a certain amount of time passes. (The Scores virus, for example, waits four days before doing some of its dirty work.)

Bypassing your hard disk protects you from Trojan borse programs, which appear to be legitimate applications, but which damage or erase files when you run them. A Trojan horse differs from a virus in that it isn't designed to spread by replicating itself; if a Trojan horse strikes, you can prevent future problems by deleting it. Trojan horses have been rare in the Mac world, although earlier this year two surfaced on a bulletin board system in Edmonton, Alberta. Called Mosaic and FontFinder, they appear to be utility programs, but when run, they erased the directory of the Mac's hard disk and displayed a message saying "Gotcha." Prior to their appearance, the Macintosh world's best-(continues)

# Imagine Losing Everything In Your Mac.

# We need someone with the confidence of a surgeon, the dedication of a marathoner and the courage of an explorer.

We need someone to fill a unique job opening.
Someone to spend two years in another country. To live and work in another culture. To learn a new language and acquire new skills.

We need someone who wants to help improve other people's lives. Who's anxious to build lasting friendships. To gain memories and experience that will last a lifetime. And a sense of fulfillment few jobs can match.

We need a Peace Corps volunteer. Interested? The first step is easy. Call 1-800-424-8580, Ext. 93.

### Peace Corps.

The toughest job you'll ever love.



### **GETTING STARTED**

### HOW TO

known Trojan horse was a HyperCard stack called Sexy Ladies, which displayed smutty images while erasing data from the disk it was stored on.

- Protect your networks. Only applications known to be uninfected should be copied to a network file server. If you're in charge of running a server, establish guidelines to prevent anyone else from copying programs to the server. Also consider using the file server for document storage only, and running applications from local hard or floppy disks (not a bad approach in any case, given the less-than-blazing speed of LocalTalk cabling).
- Consider using one or more virusdetection utilities. These are programs you can use to scan suspect disks for viruses, remove viruses from infected programs, and guard against future in-

fection. They're often described as the vaccines of the computer world, but the truth is, they're more like chicken soup—not guaranteed cures, but certainly worth trying.

If you suspect a virus infection, see "When Infection Strikes" for some tips on what to do.

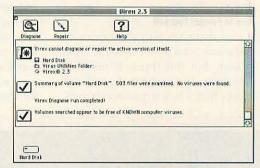
### **Mac Medicine**

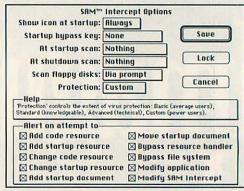
After the Big Mac Viral Epidemic of 1988 (which snared more media attention than victims), programmers on the side of law and order began developing ways to detect, disable, and prevent viruses. Today, you can choose from four commercial virus-detection utilities and nearly a dozen shareware or free ones.

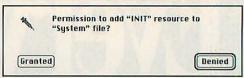
The commercial packages—HJC's Virex, Symantec's SAM, Mainstay's Anti-Toxin, and 1stAid Software's Anti-Virus Kit—include an application for scanning suspect disks and repairing infected ones, and a watchdog INIT, which can help prevent infections (see "Virus Hunt").

It's a good idea to use a virus-detection application's scan mode to check for viruses before backing up. Virex also has a Record/Scan command that saves information about the size and contents of one or more files. If you suspect infection, run the Record/Scan procedure again, comparing the results with the first scan. This is a useful way to spot a new virus that the utility might not otherwise detect. Anti-Virus Kit has a similar feature called Inoculator.

Watchdog INITs provide several lines of defense against future infections. They automatically scan a newly inserted floppy disk for viruses; if one is found, you can eject the diseased disk and throw it away or you can try to repair it. The INITs also display a warning dialog box if you try to start an infected application. Virex's INIT also watches for the Mosaic and FontFinder Trojan horses.







### Virus Hunt

Commercial virus-detection utilities include a scan-and-repair application such as Virex (top) and a watchdog INIT such as Symantec's SAM Intercept (middle). When a program attempts to modify a file in the way that a virus would, a watchdog INIT displays a dialog box that lets you grant or deny access to the file. At bottom, a warning displayed by CE Software's free Vaccine watchdog.

SAM's watchdog INIT can also help prevent "unauthorized" modifications to applications and the System Folder. When a program (virus or otherwise) tries to modify an application or system file or attempts to add a new INIT to the System Folder, a warning appears that lets you prohibit or permit the operation. (You can also tell SAM to automatically allow a specific type of modification, to eliminate unnecessary warnings.)

As for the free and shareware virus utilities, the most popular are John Norstad's Disinfectant (a detection and repair application), Don Brown's Vaccine (a watchdog INIT), Jeffery S. Shulman's VirusDetective (a detection and repair DA), and Apple's Virus RX (a detection application). "Virus Fighters" summarizes the features in these and other virus utilities.

At least one virus-detection utility belongs in every Macintosh user's software library. Start with Virus RX, Disinfectant, and Vaccine—they're free, and they may be all you'll need. For extra protection, consider one of the commercial packages. I've never needed one, so I can't make a firsthand recommendation. My colleague Bruce Webster, however, favors Virex and SAM (see *Reviews, Macworld*, January 1990).

If security is extremely important, you might also consider Casady & Greene's AME. Short for Access Managed Environment, AME provides more security than you'll find at a Secret Service company picnic. You can create a list of people permitted to use your Mac, and then define privileges-such as the ability to create or delete files, use printers, or insert floppy disks—for each user. For virus protection, you can register your healthy applications as "trusted," and then instruct AME to compare an application to its registration to verify that it hasn't been altered. If it has, AME won't allow it to run.

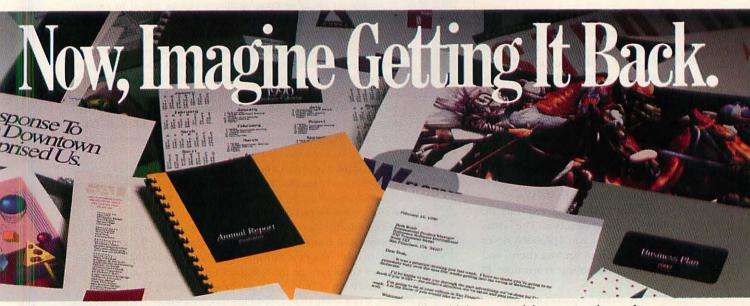
### **No Sure Cures**

As I mentioned earlier, a virus-detection utility can't guarantee immunity. It's possible for a new virus to bypass a utility's detection and prevention features. When a new virus appears, a

detection utility must be revised to recognize it. Updates for commercial programs usually cost \$15–\$25; if a few new viruses appear each year, you'll spend a small sum keeping your medicine cabinet up to date—and you'll be partially unprotected until the latest versions arrive.

It's also worth noting that watchdog INITs can cause problems if you're not careful. SAM's Intercept INIT, in particular, lets you intercept certain activities that some programs perform as part of their normal operation. SAM includes a list of over a dozen software and hardware products that Intercept may not work properly with—one of them is HJC's Virex INIT. With virus utilities, two watchdogs do not necessarily offer twice the protection of one.

Some people believe virus-detection utilities challenge virus writers to create new strains that can bypass their protection measures. They may be right; the WDEF virus contains a stealth mechanism that enabled it to evade most detection utilities when it appeared last December. Last January (continues)



You'll get your data back fast with SUM II.™ New SUM II recovers crashed hard disks and accidentally thrown away files so effectively, *MacWEEK* magazine calls it "the best set of utilities available for file and disk recovery."\*

SUM II protects data, speeds up hard disks,

and even includes a complete backup program. It's the

best-selling, highest-rated data protection and recovery program for the Macintosh.\*\* Imagine what it can do for you.

Get SUM II today! See your dealer or call (800) 228-4122 Ext. 688G for information.



The #1 Data Protection and Recovery Program



Symantec Corporation, 10201 Torre Avenue, Cupertino, CA 95014. (408) 253-9600.

\*Stew Costa, MacWEEK, 10/3/89. \*\*MacUser 1989: Editor's Choice, 5 Mice Rating, and Eddy Award for Best Utility. Macworld's 1989 Reader's World Class Award. Publish's 1989 Reader's Choice Award. Best seller through National Distributors: Ingram Micro D, Softsel, Kenfil. SUM is a trademark of Symantec Corporation.

1990 Swandard Carboration

### VIRUS FIGHTERS Description Developer **Price** Anti-Virus Kit 1stAid Software \$79.95 Includes watchdog INIT and scan-and-repair application. May no longer be available; will not be updated. Michael Hamel Removes nVIR infections and prevents future nVIR infections. Detects nVIR clones. AntiPan free \$99.95 Includes watchdog INIT and scan-and-repair application. Awkward design; not recommended. **AntiToxin** Mainstay Dave Platt INIT that repairs and protects against WDEF infections. Eradicat'Em free GateKeeper Chris Johnson INIT-cdev that protects system files and applications against infection. An alternative to Vaccine-more thorough checks, but requires some setup time. Recommended for use with GateKeeper Aid. GateKeeper Aid INIT that repairs and protects against WDEF infections. Chris Johnson free Symantec AntiVirus Symantec \$99.95 Includes watchdog INIT and scan-and-repair application. for Macintosh (SAM) Vaccine Don Brown free INIT-cdev watchdog that warns you when a program attempts to modify system or application resources. (CE Software) Highly recommended. Virex Includes watchdog INIT and scan-and-repair application. Recommended. HJC \$99.95 Virus RX **Apple Computer** Detects Scores, nVIR, INIT29, ANTI, and WDEF. Doesn't repair infected applications. VirusBlockade II Jeffery S. Shulman \$30 (shareware) Virus-detection cdev. Works with VirusDetective to scan inserted floppies for viruses. VirusDetective A powerful desk accessory you can configure to detect new viruses as they appear. Doesn't repair Jeffery S. Shulman \$35 (shareware)

infected applications, but does cure WDEF infections.

this escalating software arms race prompted 1stAid Software to discontinue its Anti-Virus Kit. At this writing, Anti-Virus Kit is still sold and supported, but will no longer be updated as new viruses appear.

### What Are My Chances, Doc?

How likely are you to get a virus? In a *Macworld* reader survey that ran in the October 1988 issue, only about 8 percent of our readers had been infected. I've never had a virus, and I hang out on a half-dozen information services and run untested shareware with abandon. I do use Vaccine, but I don't back up as often as I should. OK, I'm a hypocrite—a doctor who tells you to watch your diet while his own cheeks bulge with M&M's.

Or maybe I simply give viruses the attention they deserve. The virus threat is minimal; you'll probably never see one. But they are out there, and new ones could appear at any time.

See Where to Buy for contact information.

Jim Heid is a Macworld contributing editor who each month focuses on a different aspect of Mac fundamentals. His latest book, coauthored with Peter Norton, is Inside the Apple Macintosh, an advanced user's guide published by Brady Books.

### WHEN INFECTION STRIKES

our Mac is acting up. Should you suspect a virus? Not at first, unless the problem is a dialog box containing a universal message of peace. Most system errors or other problems can be traced to nonviral causes: conflicting INITs, a damaged disk, loose or damaged printer cables, or application bugs (see "Getting Started with Troubleshooting," Macworld, August, 1989). I learned this the hard way last year: I spent two days trying to eradicate a suspected WDEF infection after my system slowed to a glacial pace, but the problem turned out to be conflicting INITs. It goes to show that even the threat of a virus infection can impair your productivity.

After you've eliminated nonviral possibilities, compare your list of symptoms to those in "Field Guide to Viruses." Run Apple's Virus RX utility, Disinfectant, and any other virus detectors you might have. If the detection utility identifies an infection, you need to take action.

- Isolate the patient. If you're on a network, disconnect the LocalTalk connector where it attaches to the Mac's printer port. Inform other members of the network before disconnecting your Mac and be sure they know your machine is infected—theirs probably are, too.
- Replace the infected files with healthy backups if you have them. (You did back up yesterday, didn't you?) If you don't have healthy backups, use a virus utility to try to repair the damaged files. First, because the disinfecting process itself could damage the files, back up the files the utility says are infected. Copy them to floppy disks and be sure to clearly label those disks as infected. If one utility fails to repair the files, try another. If you can't fix a file, delete it. Once you've successfully repaired or deleted all infected files, run the detection utility again.
- After you repair the files, erase the infected backup disks. Don't use the
  Finder to erase the disks; you might reintroduce the virus when you insert an
  infected disk. Instead, use a magnetic bulk eraser such as Radio Shack's
  catalog number 44-232. A bulk eraser uses a strong magnetic field to scramble
  the disk's microscopic magnets, so don't use it near your good disks.



World Class Award

## Turbo Mouse. Wins again and again g, the readers he have voted and again. Turbo Mouse is quicker, quieter, and easier to use. It delivers the winning combination of speed, precision, two buttons

That's right. For the third year running, the readers of Macworld magazine have voted the Kensington Turbo Mouse®

"Best Input Device" for Macintosh computers.

Who were the contenders? Every other trackball and mouse on the market. (Not to mention joysticks, keyboards and graphics tablets.) The winning secret? Simple.

of speed, precision, two buttons

with extra features, and a comfortable, space-

saving design-all for just \$169.95.

For a free brochure, or a dealer near you, call (800) 535-4242. Outside the U.S. or in New York, call (212) 475-5200.



# Some think there's no a Microsoft applications. The same thing about

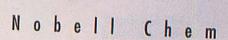


## Nobell Chem Revenue Potential

and the state and skout

on top al Harbole	1989	1990	1991	1992
High Growth Markets  Medical Applications Industrial Applications	15 30	25 39	40 46	60 51
Total % of total	45 55%	64 63%	86 68%	72%
Mature Markets			40	4
Detense Applications	36	38	32%	28
X of total Total Revenue	45% 81	102	126	15





Report to the Board of Trustees

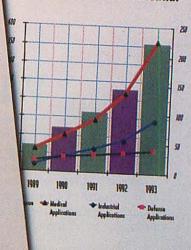
During the past twelve months, the Nobell Chem Corporation pulled far ahead of the competition, through the diverse and strategic marketing of its Nitro Glycerin compound.

hich was discovered in 1847 by Ascanio Sobrero and commercially developed by Prize fame), has long been used in the manufacturing process of charactering

now become a leading marketer of Nitro Giyeerin in pill form, to aid if uses. As a result of this development, Nobell Chem is now expanding istribution channels.

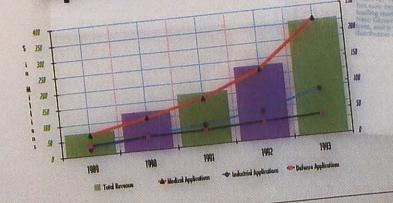
1989	1990	1991	1992	1993
15 30 36	25 39 38	40 46 40	60 51 42	85 72 44
81	102	126	153	201

### **Explosive Growth Potential**





# **Explosive Growth Potential**



# dvantage to combining hen again, some though ut nitro and glycerin.

Can't Unda

鄉民

ME

9811

MA

98K

98Y

₹F4

Eut

Lopy

**Paste** 

Lieur

Again

Table...

Show 9

Glossary...

Paste Link

Update Link SSF3

After you update your data in Microsoft Excel, select "update link" from Word's edit menu, and the change

will automatically appear elsewhere.

If you own a Mac<sup>®</sup> you may already know what a phenomenally powerful piece of software Microsoft Word is.

And, most likely, you're also aware of how

powerful Microsoft Excel is. Well here's something you probably don't know:

When Word and Microsoft Excel are combined, they're even more powerful. In fact, they're nothing short of explosive. Pun intended.

Because together Word and Microsoft Excel allow you to exploit the Macintosh's operating system in a way that has never been possible before.

We call this unprecedented feature "warm links." But you'll be more inclined to call it the best thing

for revising documents since white out.

Here's how warm links works. Imagine it's the end of the day and tomorrow's the BIG presentation. You've been working with the sales manager to incorporate his Microsoft Excel projections into your report. You're finally done. But wait. Suddenly he makes one of his famous last-minute changes to the spreadsheet.

This is where warm links saves the day (or the hour). No more antiquated manual moves of opening and closing your document, cutting, pasting and praying. With warm links, you simply open your Word document and select Update Link. Word automatically finds the latest Excel data and updates

your report. It's as simple as it sounds.

Of course, because we are talking about the BIG presentation here, you'll want to go the extra step and blow them away. Enter Microsoft PowerPoint. It's the easiest way to create atten-

tion-getting overheads and slides in black and white or color. Just cut and paste data from Word or Microsoft Excel into your presentation, draw, color, shadow, and take a bow.

As you probably know, Microsoft and the Macintosh have an unusually close relationship. We've been involved with the Mac since the beginning. Which means we know how to get the most out of it, now. So, if you want to coax ever more capability from your Macintosh,

depend on these and the rest of the Microsoft line of business applications, that are always designed to get a powerful reaction from each other. And your Macintosh.

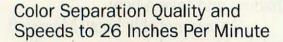
For a free brochure that describes how you can improve productivity by using

Microsoft's Mac applications together, call (800) 541-1261, Dept. K29. Ask about The Microsoft Office—four of Microsoft's best-selling business applications at a great price.





New PostScript®
System
Cuts Costs



Varityper's new modular Series 4000 combines high quality photo output, high resolution plain paper proofing, and our time-saving Instant Replay feature, all in a single Adobe® PostScript imagesetting system.

Plain paper proofing reduces photo material and processing costs. Because *our* plain paper proofs are high resolution—and consequently, more faithful to final output—your photomedia "final" takes are more likely to be *the* final take.

Varityper's Instant Replay feature lets you re-image without re-RIPing! Jobs requiring multiple repro's, those which the processor "ate," or those requiring imaging at another density can be re-run at full recorder speed.

The modular Series 4000 protects your investment because you select only what you need. You can change your system as your needs change, and you don't have to replace the entire system whenever technology advances.

To learn more about Varityper's award winning PostScript Imagesetters, call:

1-800-631-8134

(In New Jersey, call 201/887-8000, Ext. 999)



**Varityper**a Tegra Company

11 Mt. Pleasant Ave., East Hanover, NJ 07936

## Insights on Panorama 1.5

WIDENING YOUR DATABASE HORIZONS

BY TOM NEGRINO
hen ProVue Development's Panorama was

introduced, it provided a wide variety of tools for organizing data. Now with the release of version 1.5, you'll find even more versatility in this flat-file database, including line items in forms and

variable record heights in reports, as well as improvements in macros, lookups, equations, and Flash Art. In this collection of tips, shortcuts, and workarounds, there should be enough to satisfy everyone from the casual user to the advanced database designer. Except where noted, these tips apply to all versions of Panorama. Thanks to Russ Wyllie of ProVue and Panorama power user Derek Martin, Jr., for sharing their expertise.

#### In Fine Form

Because Panorama's form-and-report generator is so fully featured, if you don't study the manual thoroughly you can easily miss tips for speeding up your work. For example, when you're designing a print report form, it's usually important to line up objects on one tile with those on another. In a typical report, titles on a header need to line up with data-cell objects on a body tile. To simplify report setup, instead of creating each tile from scratch by clicking and dragging, Shift-Option-drag a tile to make a second tile of the same dimensions so that they'll align automatically. To align tiles that already exist, choose the Align Objects command from the Arrange menu and select the Left & Right option from the resulting dialog box.

The Magnify tool in graphics mode lets you zoom in up to eight times, without affecting the other tools and commands. Pressing the Shift key turns the magnifying glass into a microscope, which lets you zoom out to a 25 percent view of your form.

If you've selected an entire object, the Nudge commands allow you to move it pixel by pixel. After you've changed the size of an object by dragging one of its handles, you can use either the Nudge commands or the arrow keys to tweak its size. Each nudge moves the handle that was dragged one pixel. You can continue nudging an object's size until you select another object.

When you're working with smaller objects, you may find it difficult to select the handles at the corners of the object. Pressing the S key invisibly expands the handles to fill nearly the entire object. This is especially useful when you have many small objects selected and there are many handles visible.

One of the forms editor's most useful features is Cluster Resize. If you select many objects at a time with the marquee, dragging on one object's handle causes all the objects to resize at the same time. This saves a lot of time when you're adjusting the height or width of rows and columns in a table. An added bonus is that if you resize the objects in the middle of a table, the surrounding objects move to make room for them.

The Dimensions dialog box not only lets you specify an object's size precisely, it also lets you key in the dimensions relative to the upper-left corner of the object. Just type a plus sign before the number (see "Setting Sizes").

#### **Date- and Time-Stamping a Report**

To put the current date and time in a report, enter the following text into a paragraph object in the form window. Then place the paragraph object onto a header or footer tile.

{datepattern(today(),"Month dd, yyyy,") +timepattern(now(),"HH:MM AM/PM")}

The date and time will appear in this format: February 5, 1990, 3:00 PM (continues)

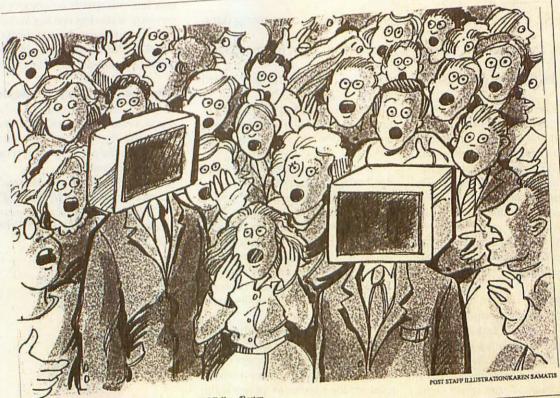


## When MACWORLD Expo comes to Boston, it's big news.

125 pages
25 cents
35 cents at newsstands

# BOSTON PUS

WEDNESDAY, AUGUST 8, 1990



Fanatical and fledgling MacHeads mingle at MACWORLD Expo/Boston.

50,000 MacHeads invade Boston

Register now for MACWORLD Expo/Boston, August 8-11, and save \$10-\$15

## Hotels roll out the red carpet and lower rates for MACWORLD Expo/Boston

Several Boston hotels have agreed to offer special discounted rates to all attendees of MACWORLD Expo/Boston.

When you call to make a reservation, simply mention that you're going to MACWORLD Expo. There are only a limited number of rooms available at preferred rates, so plan early. Please note: all codes are 617.

area codes are 617.			
HOTEL	PHONE	SGL/DBL	
Back Bay Hilton	236-1100	\$145/\$165	
Boston Harbor	439-7000	\$205/\$235	
Boston Marriott Copley	236-5800	\$155/\$165	
Charles Hotel	864-1200	\$160/\$170	
Colonnade	424-7000	\$150/\$170	
Copley Plaza	267-5300	\$150/\$170	
57 Park Plaza	482-1800	\$100/\$110	
Four Seasons	338-4400	\$200/\$220	
Guest Quarters Suites	783-0090	\$145/\$165	
Hilton at Dedham Place	329-7900	\$125/\$135	
Holiday Inn:			
Boston/Brookline	277-1200	\$110/\$120	
Government Center	742-7630	\$117/\$133	

Howard Johnson:			
Cambridge	492-7777	\$120/\$130	
Southeast	288-3030	\$75/\$85	
Hyatt Regency	492-1234	\$150/\$170	
Inn at Children's	731-4700	\$95/\$105	
Lafayette Hotel	451-2600	\$150/\$170	
Lenox Hotel	536-5300	\$145/\$165	
Logan Airport Hilton	569-9300	\$135/\$155	
Marriott Long Wharf	227-0800	\$205/\$225	
Meridien	451-1900	\$185/\$205	
Omni Parker House	227-8600	\$145/\$165	
Park Plaza	426-2000	\$120/\$140	
Ritz Carlton	536-5700	\$185/\$205	
Royal Sonesta	491-3600	\$130/\$130	
Sheraton Tara, Braintree	848-0600	\$120/\$120	
Tremont House	426-1400	\$108/\$120	

beralism's subst

Land bi savings ( America Airlines A

MACWORLD PRESS

MERICAN Airlines is the official of MACWORLD Expo. And y 5% to 45% if you fly to Boss can. To take advantage of thi call 800-433-1790 and ask for number S-0580AL. You'll cally receive your discount.

allbach

re responcities know n dictato-

long enouga Americans can fin isfaction - and hop alization of Easter Amore as a gree by

orBA degrees pro may become as scarce as sensitive editors v fight to publish the work of talented writers

MACWORLD Expo/Boston

Hotline 617-361-3941

961-1000

\$82/\$90

## Register for MACWORLD Expo/Boston by July 10th the industry - and thoughtfur and save \$10-\$15

This is your chance to preregister for MACWORLD Expo/Boston, Wednesday, Thursday, Friday, and Saturday, August 8, 9, 10, and 11, 1990, at the World Trade Center, Bayside Exposition Center, and the Wang Center.

Please choose your package and fill out this form completely. Incomplete forms will be returned. Use one form per person. (Make photocopies to register additional people.) Then send the completed form(s) along with payment to: MACWORLD Expo, P.O. Box 4010, Dedham, MA 02026.

### Special Instructions for International Attendees.

If you're preregistering from outside the U.S. and prefer to have your badge sent to you instead of picking it up at Bayside Exposition Center, be sure to check the appropriate box on the preregistration form. Also, please add an additional \$45 to your preregistration cost. We will Federal Express your badge directly to you. Please fill in the exact street address and be sure to include your telephone number. Do not use a Post Office Box. and freedom, while his

## MACWORLD Expo/Boston announces show hours

## EXHIBITS

surface to.

ship between adults; a part

with drug or al- hol dependency; -

1

0"

TO.

(44

1 bc

ld bo

\$6 b invig. 1 came of the

use:

style

cial end

ets has e prob-

m.

d to er

Randolph

Wednesday, August 8 Thursday, August 9 riday, August 10 aturday, August 11

10 a.m.-3 p.m. 10 a.m.-6 p.m. 10 a.m.-6 p.m. 10 a.m.-3 p.m.

# CONFERENCE PROGRAMaism-Leninism in the

Wednesday, August 8 Thursday, August 9 Friday, August 10 Saturday, August 11

10 a.m.-3 p.m. 10 a.m.-6 p.m. 10 a.m.-6 p.m. 10 a.m.-3 p.m.

us empirical evidence iomsky is correct in that academic intellee-

a resolution and the s in the West are ignored tions rest squarely on ; ase they continue to adtellectual tradition da ane old, tired prescrip-Edmund Burke and con century by James Bur Hayek and William F. among others. The influ lectuals is not in decline sive power of the left is,

## Register for MACWORLD Expo/Boston by July 10 and save \$10-\$15.

This is your chance to preregister for MACWORLD Expo/Boston, Wednesday, Thursday, Friday, and Saturday, August 8, 9, 10, and 11, 1990, at the World Trade Center, Bayside Exposition Center, and the Wang Center.

Please choose your package and fill out this form completely. Incomplete forms will be returned. Use one form per person. (Make photocopies to register additional people.) Then send the completed form(s) along with payment to: MACWORLD Expo, P.O. Box 4010, Dedham, MA 02026. Please do not staple check to form.

Registration cards must be received by July 10. Cards received after July 10 will be returned. Purchase orders cannot be accepted. Registration fees are not refundable. For further information call the MACWORLD Expo/Boston Hotline at 617-361-3941. U.S. attendees will be mailed their badges on or about July 24. (Be sure to check box indicating where badge should be sent.) All other badges will be held at the Preregistration Counter at the Bayside Exposition Center for pick up beginning Wednesday, August 8.

#### **MACWORLD Expo Attendee Bonus:**

All registration fees to MACWORLD Expo/Boston include a six month, \$7.50 paid subscription to MAC-WORLD Magazine. (MACWORLD's basic subscription rate is \$30.00 for 12 issues.) When you preregister, we'll include your MACWORLD Magazine subscription request form in the preregistration package.

Please register me for:  ☐ Package One \$65  Conference sessions* and exhibits. Preregister by July 10. (\$80 at the door)	Package Two \$15 Admission to exhibits only. Preregister by July 10. (\$25 at the door)	☐ I am an International attendee and would like my badge shipped by Federal Express. I have enclosed an additional \$45.00.		
Please send my badge and further i	nformation to:			
Please check one:   Home Address	☐ Company Address			
Last Name	First Name			
Street Address				
City, State, Zip				
Country				
Telephone				
If mailing to company address:				
Title				
Company				
☐ Check enclosed (make payable to MACW	ORLD Exposition) Amount: \$			
☐ Master Card ☐ Visa ☐ America				
Account Number		Expiration Date		
(Inc	ude all numbers)	Expiration Date		
Card holder signature	(Signature necessary to be valid.)			
If card holder is other than registrant, please				
Last Name	First Name			
Cash only at the door	After July 10, you must regist	er at the show.		
Please check the appropriate boxes:	· · · · · · · · · · · · · · · · · · ·			
Your industry or profession Your ti		Size of your organization (number of		
	CEO/president/vice president Comptroller/treasurer/accountant	employees national/international) y.  Under 50 bb.  500-999		
	DP/MIS manager	z. 50-99 cc. 1,000-5,000		
	Owner/partner	aa. 🗌 100-499 dd. 🗎 Over 5,000		
e. Business services q. C. f. Professional (law/medicine) r. C.	Engineer Doctor/lawyer/dentist	Which accept acceptance (a) do not not to a		
	Educator	Which personal computer(s) do you own/use? ee. ☐ Macintosh		
	Art director/writer/editor	ff.   Macintosh Plus		
	Consultant	gg.   Macintosh SE		
	Marketing	hh. Macintosh II		
	Sales Other (specify)	<ul><li>ii. ☐ Apple II Series</li><li>jj. ☐ IBM PC (or compatible)</li></ul>		
ii ii outer (speeny)	Office (specify)	kk. None		
MINARY CONTRACTOR OF THE PROPERTY OF THE PROPE	7077	II.   Other (specify)		
*All conference sessions are on a first-come, first-served ALL REGISTRATION FEES ARE NON-REFUNDAB				
Please fill out this form completely and send it, along with		RLD Expo, P.O. Box 4010, Dedham, MA 02026.		

PLEASE DO NOT STAPLE CHECK TO FORM.

MACWORLD

EXPOSITION

Boston, August 8-11, 1990

# EXTRA! EXTRA! MACWORLD Expo for they can do 10 years ing on their heads. We

of punish. Marie

talking on undercover tapen about how they can do six

with ude-

nt

0

CC

Ci

11

1)1'

die

lic

but

1 0

1111

:1'1

11711

hile

rist

clu

Lil

acı

it J.

m

1p

Mark your calendar and make your reservations. The biggest Macintosh event in the world comes to Boston Wednesday, Thursday, Friday, and Saturday, August 8, 9, 10, and 11, 1990.

In four action-packed days, you'll pick up all the latest Macintosh news - hot off the presses.

Find out about new hardware. New software. New peripherals. New services. New ideas. And new ways to put your Macintosh to work in the office, in the lab, in the studio, in the classroom, or in your home.

#### With over 400 exhibiting companies, there's something for everyone.

Whether you're interested in networking, spreadsheet analysis, databases, multimedia, education, research, word processing, accounting, law, CAD-CAM, forecasting, design, publishing, illustration, animation, music, programming, or fun and games, you'll find it at MAC-WORLD Expo/Boston.

Visit more than 400 exhibiting companies spread over 300,000 square feet of space. Attend dynamic seminars and workshops run by industry experts. Sharpen your Macintosh skills on the spot. And more.

#### Flash! MACWORLD Expo/ Boston has a whole new look.

MACWORLD Expo/Boston offers you more conference sessions and covers even more topics than ever before — in an expanded four-day format that still leaves you with plenty of time to visit the hundreds of exhibits or attend the all-new Treasuries of Practical Tips. (More on this later!)

Start off the day with the MACWORLD Expo Great Debates and Keynote Presentations, guaranteed to lift your spirits and rev your engine. You'll get the latest scoop straight from leading Mac insiders. Then choose from eight different Conference tracks scheduled for Wednesday through Saturday, August 8, 9, 10 and 11 - all available on video and audio tape at a nominal cost.

"11"

1. The Multimedia Mac (NEW in Boston!). Learn about the incredibly exciting integration of video, sound, and animation on the Macintosh platform.

#### 2. Designer Solutions (NEW in Boston!).

You asked for it! And here it is - two days of intensive sessions especially for architects, graphic artists, engineers, advertising agencies and others who want to get the most out of the Macintosh as a design tool.

3. Software Review Sessions (NEW in Boston!) The software reviewers of leading Mac publications tell it like it is. Get authoritative, unbiased overviews of the best-selling Macintosh software packages.

4. User Workshops, Choose Introductory — for those just getting started, and those who need a quick, concentrated lesson on the most popular Mac applications; or Advanced - where experienced users share their expertise and reveal hot new ideas and tricks of the trade.

5. The Mac in Big Business. Special, no-nonsense sessions for business users. Discover how to use your Mac to solve business problems and discuss the potential impact of developing trends and technologies.

6. Programmer/Developer Forums. This is the place for veteran and novice techies to brainstorm and learn about innovative advances and techniques.

7. Special Interest Group Meetings. These sessions serve the special interests of users in an amazingly broad range of fields - including Education, the Home Office/ Small Business, Healthcare, Law Offices, International Issues, and more.

8. Late-Breaking/Popular Demand Topics. We'll top off the agenda with sessions that reflect the newest market developments. Included here will be the ever-popular MACWORLD Expo User Group Extravaganza (MUSE), where users can share information, compare tips and strategies, and discuss their concerns and problems.

#### Treasuries of Practical Tips.

Saturday, August 11, is your chance to pick up tricks, tips, and techniques that would otherwise take weeks to collect. We've packed all the powerhouse pointers and time-saving ideas learned through years of MAC-WORLD Expos into a series of two-hour "Treasuries" filled with practical how-to's on specific programs and products.

#### Special rates on hotels and airfare.

Show attendees can also save on airfare and hotels. Save from 5% to 45% by flying to Boston on American. To make your airline reservations, simply call 800-433-1790 and ask for Star File S0580AL. You'll automatically receive your discount.

And be sure to book your accommodations directly with the participating hotels listed on the front side of the registration card bound into this ad. Do it today before there's no room at the inn.

#### Register by July 10 and Save \$10-\$15!

Save \$15 on a full registration, including all Conference Sessions and Exhibits, by registering before July 10 (\$65 in advance, \$80 at the door.) Or preregister for Exhibits only and save \$10. (\$15 in advance, \$25 at the door.)

Preregistration not only saves you money, but time as well. We'll send you your admission badge early so you can walk right into MAC-WORLD Expo! And avoid long lines at the door.

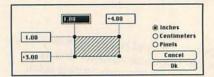
To preregister for MAC-WORLD Expo/Boston, simply complete the attached form and send it in with your payment (by check or credit card.) For more information, call the MACWORLD Expo Hotline at 617-361-3941.

And discover what's new in the world of Macintosh.

## EXPOSITIO

\*All conference sessions are on a first-come, first-served basis with no guaranteed seating.

MACWORLD Expo is sponsored by MAC-WORLD, the Macintosh "Magazine, an IDG Communications publication. MACWORLD Exposition is an independent trade show produced by World Expo Corp., and managed by Mitch Hall Associates and not affiliated with Apple Computer, Inc. MAC and MACINTOSH are trademarks of Apple Computer, Inc. World Expo is a company of International Data Group.



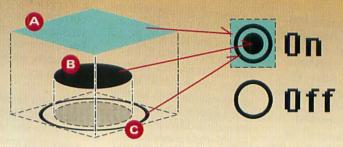
#### **Setting Sizes**

By adding a plus sign before the values in the Dimensions dialog box, you can specify an object's dimensions relative to its upper-left corner. Here, the object's upper-left corner is one inch across and one inch down from the upper-left corner of the layout. From that point, the object will be four inches wide and three inches tall.

#### **Hiding Macros**

Often you'll want to create macros that don't need to be listed in the Macro menu, because either they work behind the scenes in your database or they execute automatically. For example, a macro that automatically calculates invoice prices after you enter the amount and cost of a line item shouldn't be listed in the Macro menu, because a user could choose it accidentally at the wrong time and make the data incorrect. To keep a macro from showing in the Macro menu, when you name it put a period before the macro name.

### SIMULATED RADIO BUTTONS



With Panorama 1.5, you can simulate radio buttons (shown here) and check boxes by using Flash Art, graphics tools, and macros. A click on a transparent button object (A) triggers a macro. If the conditions of the macro are met, the Flash Art object (B) will appear. The underlying graphic (C) remains on the screen whether the Flash Art object is on or off.

#### Making Check Boxes and Radio Buttons

Panorama doesn't have a tool for creating check boxes and radio buttons on forms, but with version 1.5 you can create reasonable facsimiles of these objects by using a column in the database, either a circle or a rectangle, a Flash Art object, and a simple

macro attached to a button object. These facsimiles then look and behave like standard Macintosh buttons (see "Simulated Radio Buttons").

To create a check box, first create a column in the design sheet to hold the data, which we'll call ChkBx. Set the data type to Compressed, and create a value bar with only one value—



On. Now create and name a new form and click on graphics mode. Use the rectangle tool to draw a square, then use the line tool to draw two lines forming an *X* through it. Select the two lines you have just drawn and cut them. Open the Flash Art window and paste them in, naming the window *X*, then close the window. Return to the form, select the Create/Edit Flash Art tool, and draw a square Flash Art object that exactly covers the previously drawn square. When the Flash Art dialog box appears, enter the following Flash Art caption equation:

?(ChkBx="0n","X","")

This equation says, "If the value in the column ChkBx is On, then display the Flash Art object called *X*. Otherwise, display nothing."

Then make sure the Center button in the dialog is selected, and click OK. Now open a new macro window, name the macro .ChkBx (note the period before the name, preventing the macro from being listed in the Macro menu), and enter the following script: ScrapCalc {info("ColumnName")}

If {ChkBx "On"}
Column {ChkBx}

"On" Else Column {ChkBx}

#### Column clipboard

Once the macro is created, return to the form and choose the button tool. Use it to draw a button object that covers the previously drawn square and Flash Art objects. Then, when the button dialog appears, select your new macro-.ChkBx-from the list, make the button transparent, turn off the auto-highlight feature, and click OK. Using the Create/Edit Caption Text tool, name your check box according to the value you want it to have, select data mode, and you will find your check box ready to use. If you place a double quote character (") in the Default column of the design sheet, the check box will default to the previous record's setting for each new record.

You can create radio buttons (generally a group of them) in a similar fashion. In an accounting database, for example, you might want to use a group of radio buttons to indicate the credit card (MasterCard, Visa, Ameri-

can Express, and so on) to which a sale was charged. Create another column in the design sheet to hold the data (this time called RdBtn). Give it a type attribute of Compressed, and add a value bar, entering a different value for each button in the group. Now open a form and click on graphics mode. Use the oval tool to draw a small, white-filled circle (hold down the Shift key while drawing to get a perfect circle), and then a smaller circle, filled black. Select the black circle you have just drawn and cut it. Open the Flash Art Gallery and paste it in, naming the window Btn. Return to the form, select the Flash Art tool, and draw a Flash Art object that covers the previously drawn white circle. When the Flash Art dialog box appears, enter the following Flash Art caption equation:

?(RdBtn="Value","Btn","")

Then select the Center button, and click OK. You should substitute the actual value (such as MasterCard) you're using in the button for the value parameter in this Flash Art caption equation. Copy this first two-part but-(continues)

# One source for all your graphics system peripherals... for all graphics systems From Color Scanners, with GPIB or SCSI, to Video Processors, to Software to Network Servers to brilliant bard copy Shipko Color There

Software, to Network Servers, to brilliant hard copy Shinko Color Thermal Printers available with SCSI,...Mitsubishi International is the only name you need to know.

One source for all your graphics system peripherals. We serve a range of systems which include Macintosh, Sun Microsystems, HP/Apollo, DEC, Silicon Graphics and others which are PC based. Our full family of quality peripherals enhance applications from CAD/CAE, to Imaging, to Pre-Press and Publishing, to Process Control, Presentation Graphics and beyond.

For more information call or write: MITSUBISHI INTERNATIONAL CORPORATION

Information Systems & Services Division, Computer Graphics Dept. East Coast Office: 701 Westchester Avenue, White Plains, NY 10604 (914) 997-4999 • FAX (914) 997-4976

West Coast Office: 3255-2 Scott Boulevard, Santa Clara, CA 95054 (408) 980-1100 • FAX (408) 980-8891

"Complete Graphic Peripherals Integration"

CHC-645
300 DPI Thermal
Color B Size Printer





Mitsubishi
International Corporation

ton and paste another button for each possible value. Open the Flash Art dialog for each one, and change the value parameter to reflect the value associated with that button. Now open a new macro window, name it .RdBtn1, and enter the following script:

ScrapCalc {info("ColumnName")}

Column {RdBtn}

"Value"

Column clipboard

Create one macro for each possible value, naming them so that each is easily identified. The fastest way to do this is to copy the first macro and paste it into successive new macro windows, changing the value parameter in each one.

Once your macros are created, return to the form, and choose the button tool. Use it to draw a button object that covers each of the previously drawn circles and Flash Art objects. When the button dialog appears, select the associated macro from the list, make the button transparent, turn off the auto-highlight feature, and click OK. With the Caption Text tool, name

each button, select data mode, and your radio buttons are ready to use.

Again, placing a double quote character in the design sheet's default column will default the button setting in each record to the previous record's setting. If the buttons don't work correctly on the first try, chances are you've left out a quote mark or made some other typo in the equation.

#### **Hiding Columns in the Data Sheet**

You may want to design a database with some hidden columns to hold data that users don't need to see, such as the ChkBx and RdBtn columns described in the last tip. Although you can't completely hide a column in the data sheet, you can make it virtually inaccessible. First, go into the design sheet and set to zero the column width of any columns you want hidden (this actually makes them each one pixel wide). Next, move all your zero-width columns to the end of the data sheet. Finally, in the last normal-width column put an automatic macro that jumps to the next record or creates a new record whenever a user tries to leave that column.

#### **Skipping Columns during Data Entry**

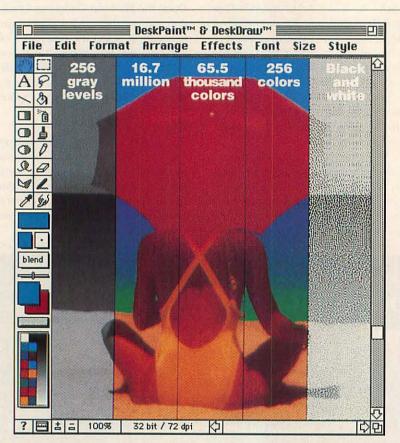
The Time Card example file that comes with Panorama includes an equation that calculates the day whenever you enter a date in the Date cell (see "Column Jumping"). So why bother tabbing through the Day column when you never key data into it anyway? Using Panorama 1.5's Close Window macro, you can make Panorama skip the Day field every time you tab out of the Date field. Just create a macro consisting of this one command:

Then set it up as the Close Window macro on the Date field. (continues)

Date	Day	Time In
2/9/89	Thu	9:07:00 PM
2/9/89	Thu	8:08:00 AM
2/9/89	Thu	8:09:00 AM
2/9/89	Thu	11:45:00 PM

#### Column Jumping

Using a Close Window macro, you can skip over any column in the data sheet that's automatically filled in or that you don't want users to enter, such as the Day column shown here.



## DIDADADODAT?

Yes, a DA did do that! Introducing DeskPaint™ & DeskDraw™ v.3.0, the most exciting graphics package ever released for the Mac.

DeskPaint supports B&W, Gray Scale, and Color bitmaps (2, 4, 8, 16, and 24 bit), PICT2, TIFF, and MacPaint® files, filters, rulers, soften, blend, intelligent lasso and paint bucket, transparent paint, graduated fills, distort, free rotate, multiple windows, and more.

DeskDraw supports PICT2 object-oriented editing, rulers, arrows, color palettes, multiple text styles in a block, hairlines, and ultra-fine align and position.

And as memory efficient DAs (DeskPaint is ¹/10th the size of PixelPaint™), they're instantly available inside applications---even without multifinder or system 7.0.

To see dem DAs do dat, visit your dealer, or call us at 1-800-482-4567 for a free brochure.

DekPin & DekDaw or redemats Zekor.

DekPin of DekDaw or redemats Zekor.



# New Forms of Business.

Paperwork. The essential inconvenience.

Whether it's invoices, travel expenses, office memos or tax returns, Informed™ software and Macintosh® computers can help you change mountains of paperwork into well-organized forms of information.

It's a new way to draw, fill out and manage forms.

#### formed Designer

Informed Designer<sup>™</sup> comes packed with high performance drawing features. All to help you draw crisp, professional looking forms in no time at all.

Grids, guides, rulers, tables, fields, combs, lines, ovals, rectangles, arcs, polygons, type — plus a whole lot more. With over 1/1000th of an inch accuracy.

Draw or scan. Make revisions in minutes. No more obsolete forms.

#### Informed Manager

With Informed Manager,™ filling out forms becomes an effortless, error free task.

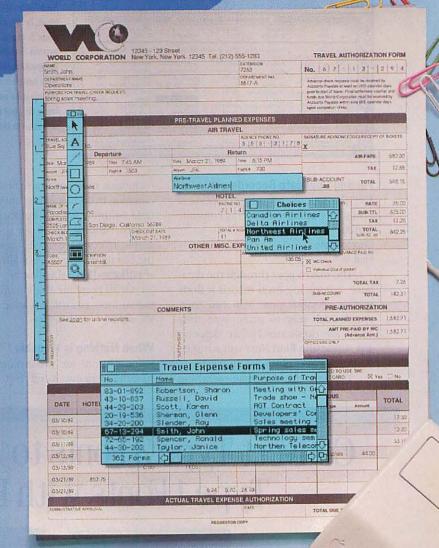
Add intelligence to your forms so they can think for themselves. Eliminate repetitive typing with powerful calculations, choices and automatic lookups. Create customized on-line help to answer common questions.

Just imagine the results. Assured accuracy on picture perfect forms.

Since Informed Manager is actually a database, you can organize and manipulate forms like never before. Search and sort at blinding speeds. Print single forms or group them for batch printing.

And because forms are stored electronically, you print less. The bottom line is less paper, less cost.

So it's time to get informed. Just give us a call. We'd be happy to tell you more.



## Get Informed.

For more information, please call or write:

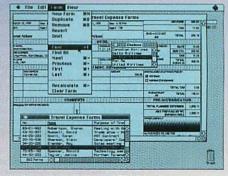


Advanced Technology Center 105, 9650 - 20 Avenue Edmonton, Alberta Canada T6N 1G1

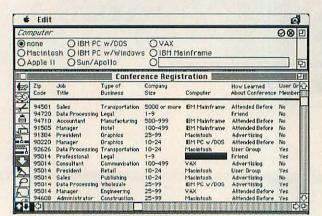
Tel. (403) 463 - 3330 FAX (403) 428 - 5376 AppleLink CDA0004 MacNet SHANA



Informed Designer



Informed Manager



No Value
By using a data entry
equation you can leave
fields with value bars
blank. In this example,
none is one of the value
buttons listed for the
Computer column. If the
none button is checked,
the equation enters nothing in the field and
moves on to the next
field.

#### **Finding Duplicate Records**

Use the following macro to locate a potential duplicate entry in a column: SortUp

Unpropagate

Find = ""

The macro goes through the database, comparing each record it finds to the previous one. You can then check each pair to make sure they really are duplicates before deleting any. Choosing Find Next will advance you to the next potential duplicate.

To make this duplicate-searching

technique more accurate, first use an equation to combine elements of multiple columns into an empty column before running the macro. For example, to combine the first initial plus the last name, use this equation:

«FirstName»[1,1]+«LastName»

Or to combine the zip code plus the address, use this equation: str(«Zip»)+""+«Address»

#### When Nothing Is Valuable

Value buttons are a convenient way to enter data into a cell. Not only do

they limit the choices to a few entries, but they also make sure the entered value is spelled correctly. However, they're very authoritarian, forcing you to make an entry in a cell whether you want to or not. That means you don't have the option of using a value bar to tab through a cell without entering data. But there is a way to get around this limitation. Set up the following equation in the design sheet («Computer» is the name of a column in this example):

«Computer»=

?(«Computer»="none","", «Computer»)

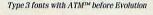
When you select the None button, the equation swoops in, intercepts the data, and skips to the next field (see "No Value").

#### **Selecting Unusual Groups of Dates**

Panorama 1.5's new Select Logic Equation option allows for some rather unusual date selections. For instance, here are some equations for choosing all records entered on a Tuesday, all records in a particular quarter, everything entered on weekends, and only *(continues)* 

# Convert Type 3 Fonts to ATM Compatible Type 1 Fonts with EVOLUTION.™







Type 3 fonts with ATM™ after Evolution

EVOLUTION™ by Image Club will convert most type 3 PostScript® fonts to Adobe® type 1 format and vice versa. The type 1 fonts that EVOLUTION produces are completely compatible with Adobe Type Manager™ (ATM). Finally, sharp and easy-to-read display text for all of your fonts, not just Adobe fonts. EVOLUTION also features the ability to "regularize" your type. Regularizing is the process of gently adjusting lines and curves of a character for optimal 300 dpi laser printer output. Of course, the amount of regularizing can be user controlled or completely disabled.

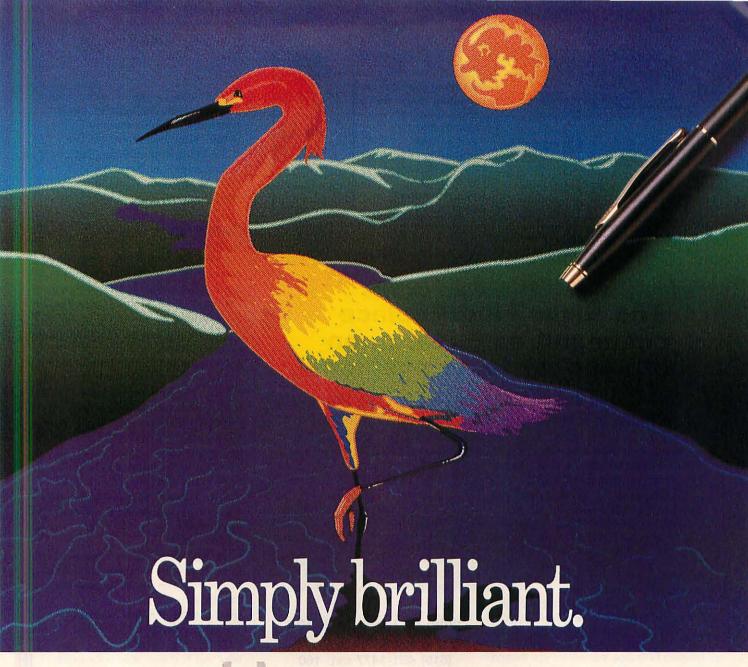
EVOLUTION will also convert type 3 or type 1 PostScript fonts to editable outlines for use in Adobe Illustrator® or Aldus FreeHand™. Convert the entire character set, or just a headline. EVOLUTION does not require a PostScript printer and costs only \$99. Available from your dealer or directly from Image Club by calling (800) 661 9410.

**EVOLUTION** 

Adapting to a changing environment.



Image Club Graphics Inc. Suite 5 1902 Eleventh Street SE Calgary Alberta Canada T2G 3G2 Phone (403) 262 8008 Fax (403) 261 7013 AppleLink CDA 0573 PostScript and Adobe Ellustrator are registered trademarks & Adobe Type Manager and ATM are trademarks of Adobe Systems, Inc. Addus FreeHand is a trademark of Adobe Corporation. ©1990 Image Qub Graphics Inc.





You can't get any brighter than this.

If you want the brightest, boldest color money can buy, you want a Tektronix color printer. No other printer on the market can make you look this good.

And our prices will make you wonder why you ever used black and white. Printers start at \$2495. You can get certified PANTONE\*\* Color that's compatible with PostScript language and Adobe fonts for only \$8995.

The PostScript-language compatible printers come with at least 8Mb of memory, a high-speed processor and 35 resident fonts. Everything you need to create

output that will get you noticed in the flash of a page.

And for even more options, our printers give you 16.7 million colors to choose from. At up to 300 dpi. You can print on paper or transparencies, using a PC or a Mac. And all of our printers come with an on-site warranty.

If it's great color you're after, it's Tektronix you want. No other printer will make you look this brilliant. For information or the dealer nearest you, call 1-800-835-6100, Dept. 10C or fax 1-503-682-2980.

**Tektronix** 

The best and the brightest.

\*Pantone, Inc's check-standard trademark for color reproduction and color reproduction materials. Copyright © 1990 Tektronix, Inc. All rights reserved. PostScript is a registered trademark of Adobe Systems, Inc. All other trademarks mentioned in this ad are trademarks of Tektronix, Inc. Nisus 2.1's Find/Replace Command

Find

Nisus 2.1 lets you search for any font, size, style, position and lets you qualify the search by asking if the item begins or follows a word, line, paragraph, or document.

"Best Wordprocessor"—MacUser UK 1989

## The Nisus Find/Replace command can search on font, type, style, or position—

—and do it in any combination. It can even find every occurrence of a word in a document and index it

Nisus 2.1, which now reads and writes Microsoft® Word files, has a Find/Replace command that is only one example of the many differences between Nisus and Microsoft Word.

With Nisus's Find/Replace command you have full use of font, style, size, and a full complement of ASCII characters-in short, what you would expect from the Macintosh®-you can even search by position or color.

The most powerful database programs have a built-in language, so why shouldn't a word processor? That's why Nisus has an integrated word processing language that will let you extend the power of Nisus to solve your specific needs. For example, one user created a function that automatically indexed all proper names in a document.

Nisus is a trademark of Paragon Concepts, Inc., Microsoft is a registered trademark of Microsoft Corp., Macintosh is a registered trademark of Apple Computer, Inc.

Circle 253 on reader service card.

Space prohibits us from showing you all of the additional advantages of Nisus over Microsoft Word-such as file comparison, multiple editable clipboards, built-in graphics, linking cross references, unlimited undos, and searching closed files.

But you don't have to imagine the rest. Simply call Paragon Concepts for your complete brochure entitled "How Nisus compares with Microsoft Word."

(800) 922-2993 ext. 100

In California Call (619) 481-1477 ext. 100



Solana Beach, CA 92075

## Protect Our Natural Resources.

Children are our greatest resource. The Boys & Girls Club provides them with a positive environment in which to learn and grow. Make a contribution today, so they can make one tomorrow.



#### HOW TO

those entered during the work week: datepattem(«Date», "DayOfWeek") = "Tuesday" datepattern(«Date», "Quarter yyyy")

- ="First 1989"datepattern(«Date», "Day")
- ="Sat" OR datepattern(«Date», "Day")
- ="Sun"datepattern(«Date»,"Day")
- "Sat" OR datepattern(«Date», "Day") "Sun"

#### **Equation Tips**

- Equations can do a lot more than just perform math operations. How about copying the entire contents of one column into another? Just click in the empty field, choose Equation from the Math menu, choose the name of the field containing the data from the Columns menu, and click OK. The contents of the first column will be pasted into the empty one.
- A fairly common application of automatic equations is to update a Modification Date column whenever you modify a cell in a record. For instance, you might want to update the Dues Paid Through column of a club membership roster whenever you change a dollar amount. To do so, paste this equation into the columns you would like updated:

«Date»=today()

- The following equation concatenates three text fields into one three-line field—chr(13) is the ASCII value for a carriage return.
- «Field 1»+chr(13)+«Field 2»+chr(13)+ «Field 3» + chr(13)
- If you come up with a good equation that you use only occasionally, rather than relying solely on your own (human) memory, paste it into your NotePad DA, along with a notation about what it does.

#### Sharing the Wealth

If you've found a shortcut or undocumented trick not mentioned here, spread the word to other Macworld readers by sending it to Quick Tips, Macworld, 501 Second St., San Francisco, CA 94107. M

See Where to Buy for contact information.

Tom Negrino is a Macintosh consultant and writer, and a director of the Los Angeles Macintosh Group. He is a frequent beta tester of new database products.

# DATA STORAGE

Internal and external hard disk drive subsystems from 20 to 2022 MB, fast as 5.4 ms. Tape backup to 1.3 GB, 45 MB removable cartridge and rewritable optical systems.



Quality and Support
"The Macintosh Way"

#### From the desk of Guy Kawasaki:

I got a MicroNet drive and loved it. Then I visited MicroNet and found out that it's truly a Macintosh Way kind of company. What a bunch of hardware tweaks!

Deep, indulgent, complete and elegant products-that's the MicroNet Way. Check out MicroNet when you need a Macintosh hard disk.

Cy Kawssol.

Author of "The Macintosh Way" and renowned Apple Evangelist.

Sold Through Better Dealers Worldwide.

Macintosh is a registered trademark of Apple Computer, Inc.

Call today for data sheets and the name of your nearest MicroNet dealer.



## MicroNet Technology, Inc.

20 MASON • IRVINE, CALIFORNIA 92718 • TELEPHONE: (714) 837-6033 FAX: (714) 837-1164 • APPLELINK: D1656 • COMPUSERVE: 76004,1611



The Mac has always had great potential in graphic arts. But until now, no one has really

provided a tool to unleash it. There has always been some form of mechanical trade-off imposed by input devices that inhibited artists from letting their imaginations flow naturally.

Now, Wacom introduces a totally "real" graphic tool, one that let's you interact with the Mac as intuitively as you would with a canvas. With Wacom's cordless, pressure-sensitive stylus your will is converted through manual pressure to line width, spray density, color

change and other programmable effects. This allows you to create "real time" artistic images free of the artificiality and limitations of other input devices. And since the Wacom stylus has neither cable nor battery, it is also ultra-light and maintenance free.

Wacom, a leading name in computer graphics worldwide with proven manmachine interface technology, invites you to a new era in Macintosh graphics with a promise:

Once you experience it, you'll never look back.

Performance/Specifications: ● Resolution: 1,270 lines/inch (0.02mm) ● Accuracy: ±0.01 inch (±0.25mm) over entire active surface ● Maximum reading speed: 205 points/second

Wacom SD-Series Digitizers: ◆ A0 to A5, square or rectangular • Surface types: standard, magnetic, electrostatic, or transparent menu panel • Pointing devices: Pressure-sensitive, stroke-type or nonstroke-type cordless stylus, 4-button or 12-button cordless cursor



Circle 507 on reader service co

WACOM Inc.

West 115 Century Road, Paramus, NJ 07652, U.S.A. Tel: (1) 201-265-4226, Fax: (1) 201-265-4722

**WACOM Computer Systems GmbH:** 

Hellersbergstrasse 4, D-4040 Neuss 1, West Germany Tel: (49) 2101-16001, Fax: (49) 2101-101760

WACOM Korea Co., Ltd.

371-36, Karibong-Dong, Kuro-Gu, Seoul, 152-020 Korea Tel: (82) 2-869-5595, Fax: (82) 2-869-1241

WACOM Co., Ltd.

**International Division** 

4-1-12, Ikebukuro, Toshima-ku, Tokyo, 171 Japan Tel: (81) 3-985-0097, Fax: (81) 3-985-8636

WACOM is a registered trade mark of WACOM Co., Ltd. Copyright @ 1990 by WACOM Co., Ltd. All rights reserved. Macintosh and Mac are trademarks of Apple Computer, Inc.

## **UPDATES**

Here's our list of the current versions of Mac software that were shipping at the time we went to press. We hope you'll find it useful, because these days keeping track of the latest CPU is tough enough.

CopyFlow version 2.0 adds menu selections that give the user the ability to automatically import and export text or artwork to and from page layouts; is fully integrated with QuarkXPress; and supports Quark Extended Style Tags and North Atlantic Publishing

Systems' style tags. North Atlantic Publishing Systems, P.O. Box 682, Carlisle, MA 01741; 508/250-8080. Free upgrade; \$395 new.

Falcon version 2.2 includes midair collisions; supports the Mac SE/30, Portable, IIcx, and IIci; and has increased support for non-Apple hardware, including SuperMac, RasterOps, and Radius monitors. Sphere, Inc., 2061 Challenger Dr., Alameda, CA, 94501; 415/522-3584. \$3 upgrade; \$59.95 new.

**Pyro version 4.0** is programmable and includes Aquarium, Blocks, Dimwit (a Macintosh II screen dimmer), Doughnuts, Fireworks Too, Kaleidoscope, Marquee, Restless Picture, Slinky, and Stars modules. All selected modules are used in rotation from one screen save to the next so you do not have to open the Control Panel. Fifth Generation Systems, Inc., 11200 Industriplex Blvd., Baton Rouge, LA, 70809; 504/291-7221. \$15 upgrade; \$39.95 new.

Product	V.	Req.	Rev.	Price
1st Aid Kit ★	2.8	512KE/3.0		-
4th Dimension	2.0	1MB/6.02	3/90	
Aatrix CheckWriter II *	2.01	512K/4.1		\$10
Aatrix TimeCard	2.0	512K/4.2		Free
Accountant Inc.	2.1	1MB/6.02		\$9.50
ACCPAC Bedford Simply Accounting	1.1	1MB/5.1		\$50
AccuText ★	1.1	4MB/6.02	2/90	•
Adobe Type Manager	1.2	1MB/6.02	2/90	Free
AdWriter	2.0	1MB/6.0		Free
After Dark	1.1	512KE/3.2	NEDIE I	\$5
Alchemy	1.1	1MB/6.0	TWEE .	\$25
Aldus FreeHand	2.0	1MB/6.03		•
Aldus PageMaker	2.02	1MB/4.1	E/Par	
Aldus Persuasion	2.0	1MB/6.0		•
AmPack Plus ★	4.2.2	512K/3.2	1/90	\$29.95
Analog Connection  WorkBench	3.0	1MB/5.0	5/90	\$50
Anatool *	3.1	512K/3.0	7/89	\$35
AntiToxin	1.3	1MB/6.0.2	1/90	\$15
APL.68000	7.0	512K/3.2		•
AppleShare File Server	2.0	512K/3.2		3:
Archie	2.0	1MB/6.0		\$75
ArchiText	2.0	1MB/6.02	7/B9	Free
Aristotle's Politics	2.0	2MB/6.03		Free
The Art Importer	2.0	1MB/6.0	5/90	\$20
ArtRoom	3.0	512K/3.2	FIGURE.	\$199
AutoCalc	2.0	1MB/6.0		\$95
AutoSave II	1.1	512KE/4.2		\$7.50
Aztec C	3.6	512KE/4.2		*
BackFax *	1.02	1MB/6.03	1/90	Free
Back to Basics:	2.0	512K/3.2		\$75
Ball & Stick ★	2.2	1MB/6.0		Free
Bill-lt	2.0	1MB/6.03	NAME OF TAXABLE PARTY.	\$29

**Bold** = first time the product is being listed.

★ = minor update.

Product	V.	Req.	Rev.	Price
Business Session ★	3.2	512K/3.2		Free
CA-Cricket Presents	2.0	1MB/6.0		Free
Calculator	2.06	512K/3.2	4/90	\$25
Construction Set ★				
CanOpener	1.1	512K/3.0		Free
Carryas	2.1	1M8/6.0		
Capture	2.0	1MB/6.0	2/90	\$15
ChromaScan	1.1	4MB/6.02		Free
Client/Mac	2.0	1MB/6.0	7/89	\$370
Colorset ★	1.5	1MB/6.0	6/90	Free
Colleague 2 *	2.05	2MB/6.03		
Comment	2.02	1MB/6.0		
Commtact	2.0	1MB/6.0		Free
Compileit 1.5	1.5	1MB/6.02	3/90	Free
CompuServe Navigator *	2.1	512K/3.2		14
Computerized	2.2	1MB/6.0		
Classic Accounting				
ConcertWare	5.1	512KE/4.2		\$35
Control	1.5	1MB/4.1		Free
CopyFlow	2.0	2MB/6.0	6/90	Free
Cue	3.0	1MB/6.03		
Data Desk	3.0	512K/4.02	6/90	\$125
DataMerge	2.0	512K/3.2		Free
dBase Mac ★	1.01	1MB/4.1		Free
Deluxe Music	2.5	512K/6.02	9/89	٠
Construction Set				
O.E.S.	4.0	1MB/6.0		9
Design Dimensions ★	2.15	5MB/6.03		Free
DeskPaint ★	2.1C	512KE/4.2	5/90	Free
DiagramMaker ★	1.1	1MB/6.02	1799	
Digital Darkroom	1.1	1MB/6.02		Free
DiskFit	1.5	512K/4.1	HIII.	
Network DiskFit ★	1.5	512K/4.1	12/89	13.
DiskTop	4.0	1MB/6.0		100
Display AdBuilder	1.1	1MB/6.03		
Dollars and Sense	4.1	512KE/3.2		•
DragonWave	1.1	1MB/6.03		*
Dreams	1.1	1MB/6.02		•

Req. = min. RAM and system software required.

Rev. = last time(in past year) reviewed this or an earlier version.

Product	V.	Req.	Rev.	Price
DynoDex ★	1.1	1MB/6.0	6/90	Free
Easy Color Paint	1.1	1MB/6.0		
Empower *	2.05	1MB/5.0		Free
Empower II ★	3.0	1MB/5.0		
EndLink	1.1	512K/3.2		Free
EndNote	1.2	512KE/3.2		Free
Extender GrafPak	3.0	1MB/6.02	Dir.	\$30
Falcon	2.2	1MB/3.2	HIE	\$3
Fastback II	2.1	512KE/4.1	12/89	\$30
Fast Forms ★	1.2	512K/3.2		\$25
Ferrari Grand Prix ★	1.6	512K/3.2	ETS F	\$10
Fetchit	2.0	512K/6.01		
FileMaker II ★	1.1	1MB/4.2	T NO	
Finale	2.0	1MB/6.02	5/90	Free
Financial Analysis	3.0	512K/3.0		
Findswell	2.01	512KE/3.2	3/90	
Fontographer	3.0	1MB/6.0	5/90	,
FontShare	2.0	1MB/6.0		Free
FormsProgrammer ★	2.03	1MB/6.02		\$15
FoxBase+/Mac ★	2.10	1MB/6.0		\$75
Freedom of Press ★	2.2	1MB/6.0	188	Free
FreeFlow	3.0	1MB/6.03		Free
Full Impact ★	1.1	1MB/6.0		Free
FullWrite Professional ★	1.1	2MB/6.02	H-In	Free
Gofer ★	2.01	1MB/4.1		\$25
GOL	2.0	1MB/5.0		
Great Plains	5.2	1MB/6.0		+
Accounting Series				
Help DA	3.0	1MB/6.0		Free
HFS Backup	3.0	512K/3.2	8/89	\$35
Hybase ★	1.1	1MB/6.0		Free
HydroMac	2.0	1MB/6.0	UNI	•
HyperAnimator ★	1.5	1MB/6.03		\$29.95
HyperCard ★	1.2.2	1MB/6.03	Bullet	\$10
HyperDA ★	1.2	512K/3.2		\$10
HyperEngine	1.1	1MB/6.03	7 13	Free
Developer's Tool ★				
(continues)	1	110		

Price = cost for update to registered owners.

 <sup>=</sup> contact your dealer for update policy.

## One Of America's Best Run Companies Gives 95% Of Its Money To Charity.

CARE was recently named the best run, best managed charity in America.

We aren't surprised. 95% of every dollar we receive goes to help impoverished people. Only 5% goes to run our organization.

No other company could survive on margins like that. But a lot of starving people can.



We're Helping People Learn To Live Without Us. 1-800-242-GIVE

PRODUCT	OFL	AIES							
Product	V.	Req.	Rev.	Price	Product	V,	Req.	Rev.	Pr
HyperLibrary	2.0	1MB/5.0		*	MacSchedule	2.0	1MB/6.0		\$31
HyperPort Chess	2.0	1MB/6.0	TI II	\$10	MacSmarts	3.0	1MB/6.0		
HyperWindows ★	1.2	1MB/6.02		\$20	MacTell	3.5	512K/3.0		
lcon-lt	2.0	1MB/6.02	We k	\$29	MacTerminal ★	2.31	512K/3.2	- W	Fri
Iconia *	7.0	1MB/6.0			MacToPic	2.0	1MB/6.0		\$2
lgar *	1.1	1MB/6.0	5/90	Free	MacVision	2.1	1MB/4.2	7/89	
Image Grabber	2.0	1MB/6.02		Free	MacWrite II	1.1	1MB/6.0		Fr
ImageStudio	2.0	1MB/6.0		Free	Managing Your Money	3.0	1MB/6.03	6/90	\$4
ImageWriter LQ	2.0	512K/3.2		Free	MapGrafix	2.0	4MB/6.03		Fn
Print Driver ★					MarketMaster	II+	1MB/6.03		\$2
In-CAD	2.0	2MB/6.0		•	MarkUp	1.02	1MB/6.0	5/90	Fr
InfoLogic Envelope *	6.0	512KE/4.0		\$5	Master Tracks Pro 4	4.12	1MB/4.1	6/90	\$4
	2.2	1MB/6.0			MathType	2.1	512K/6.02	11/89	200
Insight Expert	2.2	HVID/6.0			Matlab	1.2	1MB/3.0	11/03	
Accounts Payable							DI MINERAL INC.		122
Insight Expert	2.2	1MB/6.02		A AUTO	MaxPage ★	1.2	512K/3.2		Fn
Accounts Receivable					McClint	2.0	1MB/4.2	100	\$2
Inspiration	2.0	1MB/4.2		Free	McCPrint	2.0	512K/4.2		\$2
Instant-Expert Plus	3.0	1MB/5.0		Free	McMax	2,0	1MB/5.0	8/89	*
JetLink Express ★	1.01	1MB/6.0		Free	Memorybank Manager	3.0	1MB/6.0		Fn
KidsTime ★	1.2	512K/3.2		\$15	Mesa Graphics	1.03	512KE/5.0		
Kiw-Envelopes	3.0	512KE/4.1		\$10	Plotter Utility				
LAN Package	3.1	1MB/6.0	0		MGMStation ★	2.5	512KE/3.0		132
Language Systems	1.2	1MB/6.03			MicroPhone II	3.0	512KE/4.2		100
Fortran Compiler *					Microsoft File	4.0	512K/3.2		
LapLink Mac III		512K/2.0			Microsoft Mail	2.0	1MB/6.02	1/90	
LaserPaint Color II ★	1.02	1MB/6.03	T. T.	Free	Microsoft Word	4.0	512KE/3.2	10/89	
LetrTuck+	2.0	512K/3.2		\$20	Microsoft Works	2.0	512K/6.0	R MICA	
Lookup	2.0	1MB/5.0	5/90	\$15	MindWrite ★	2.1	512KE/4.2		
Mac86	2.0	1MB/6.02	4.55	\$10	MiniCad +	2.0	1MB/6.0	11/89	
Mac286	2.0	1MB/6.02		\$10	MiniDraw	4.0	512KE/4.2	11/43	\$1
				•			12 million and the		arrest a
Mac3270	2.0	1MB/6.03			MockPackage Plus Utilities	4.4	512KE/3.2		\$1
MacAnalyst	2.0	2MB/6.0		\$125	Modern Artist	2.0	2MB/6.02		\$1
MacArchitrion	4.0	2MB/6.03		Free	MOMARS	3.1	1MB/6.03		1.7
MacAtlas Paint	2.0	512K/3.2		\$35	Monte Carlo	2.0	1MB/6.03	Tip III	36
MacClassAds	4.0	1MB/6.0			More II ★	2.01	1MB/4.1		Fr
MacClint ★	1.1	1MB/5.0	D. J.	Free	MSFL: Pro League Football	2.0	1MB/6.0		7.
MacConcept	3.0	1MB/6.03			MultiLedger ★	1,1	512K/3.2		Fn
MacDesigner	3.0	2MB/6.0		\$125	Multi-User	3.01	512K/3.2		
MacDraw II	1.1	1MB/6.0			Appointment Diaries			1773	
MacEnvelope	4.1	512KE/3.2	7/1		Music Publisher	2.0.3	1MB/6,0		Fn
MacFalcon	2.1	1MB/6.03		*	MyTimeManager	2.0	1MB/6.0	5/90	
MacFlow	3.0	1MB/6.03		\$30	Navigate	2.0	1MB/6.0		Fr
MacFortran	2.4	512K/4.2	-		Nemesis Go Master	4.0	512K/4.1		
MacFortran/020	2.4	512K/4.2			The NightWatch ★	1.03	512KE/3.2		
MacFortran for MPW	1.1	2MB/6.02	To the	Free	Nisus	2.0	1MB/6.02	9/89	Fr
MacHerbal	2.0	512K/3.2	i m	\$49	NuPaint ★	1.04	512K/3.2	1500	Fr
MacHotel	3.3	1MB/6.03	Th	Free	Nutrition Stack	2.0	1MB/6.02		\$2
MacLine	3.0	512K/3.0		\$25	OmniPage ★	2.1	1MB/6.02	2/90	Fr
								.700	. 10
MacLinkPlus/Wang VS	4.0	512KE/3.2		\$45	Omnis 3 Plus/Express	2.0	512KE/3.2		
MacMainFrame 3270/CUT	The same of	2.5MB/6.02	1000	\$100	On Schedule	2.0	1MB/3.0		-
MacPhonebook	20	512KE/3.2	1/90	السنا	P51 Mustang	2.04	512K/3.2		\$1
MacPrint	1.1	1MB /6.02		Free	Flight Simulator				
MacProject II	2.0	1MB/6.0	8/89	•	PacerLink	5.0	512K/5.0		
MacProof ★	3.2.1	1MB/6.02	2/90	\$30	Panorama	1.1	1MB/4.2		Fr

Go beyond New York, Venice, and Geneva

for only \$99.

Now that Adobe Type Manager™ is opening up a whole new world of type to every Macintosh\* user, it's time to venture beyond the standard fonts—like New York, Venice and Geneva.

Introducing the Adobe Type Set<sup>™</sup> font packages. Each sells for just \$99 and includes seven carefully chosen fonts worth hundreds of dollars if we sold them separately. So your dollar goes further than ever.

But the really far-reaching news is what happens when you combine ATM™ with the Adobe Type Sets. For starters, you'll get printed text that more closely matches your screen image—even from a low resolution, dot matrix printer like the ImageWriter.\* If you're an Apple LaserWriter\* or other Adobe PostScript\* printer owner, you'll be amazed at how your screen type can be scaled to virtually any size, on the fly, and still look smooth and legible.

So if you've been tempted to explore the wonderful world of fonts, this is your chance to travel first class. With a select group from the Adobe\*

Type Library.

Adobe Type Set 2:

#### Franklin Gothic

Present\* Script

LITHOS"BOLD

Peignot\*Demi

Cooper Black

JUNIPER\*\*
COPPERPLATE

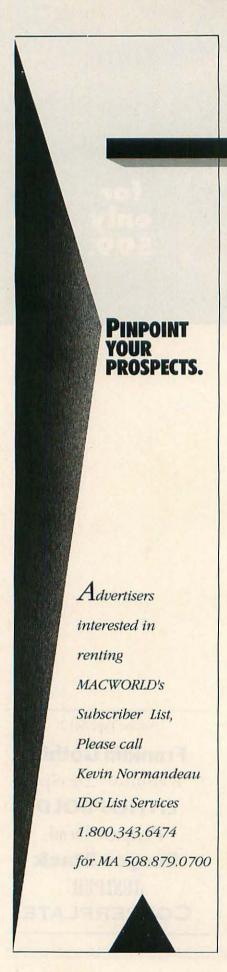
Adobe Type Set 1:

Hobo TRAJAN™ Bodoni Poster

Freestyle Script

VAG Rounded Bold

Linotext\*



Product	V.	Req.	Rev.	Price	Product	٧.	Req.	Rev.	P
EGASYS II	3.2	1MB/6.03		Free	Sound Designer	1.5	512K/6.03		
erformer Sequencer *	3.2	1MB/6.0		Free	Universal ★				
ersonal Golf Stats	2.0	512K/3.2	2/90	Free	Spelling Coach Professional	3.1	512KE/4.2		1
ersonal Reference Catalog	2.0	1MB/6.0	1416	\$10	Spellswell ★	2.2	512K/3.2	5/90	1
ersonal Phone *	1.1	1MB/6.0	1 Corne	•	Springboard Publisher	2.0	1MB/6.0		P
he Phrase Thesaurus	2.0	1MB/6.0	6/90	Free	Stepping Out II	2.0	1MB/4.1		
PICT Detective	2.0	512KE/6.0		\$20	StickyBusiness	1.06	512KE/6.03		
ixelPaint ★	1.2	2MB/4.1	N. T.	Free	Still Light	3.0	1MB/6.0		
fains & Simple ★	1.05	1MB/3.2			StrataVision 3d ★	1.0.2	2MB/6.03	4/90	
PowerDraw	3.0	1MB/6.0	to con		Suitcase II	3.0	512KE/4.1	10/89	
owerStation *	2.5.2	512K/4.1		Free	Super 3d	2.0	512KE/6.02	10/89	18
PowerTaols	3.0	4MB/6.0			SuperGlue II with	2.1	1MB/6.0	1/90	3
Practica Musica	2.1	512K/3.2		\$10	GlueNotes			MA DEC	
	2.0	AND DESCRIPTION OF THE PARTY OF		\$22.50	SuperLaserSpool	2.0.2	512K/4.1		
rinter Interface III		512K/6.02 512K/4.1		\$22.50	SuperPaint	2.0.2	1MB/6.02	8/89	5
Pro-Cite ★	1.3						Name of Street	d/pa	_
Professional Composer	2.3	1MB/6.03		Free	SuperSpool	5.0	512K/4.1	10.00	\$
Professional Image II	2.0	1MB/6.0		\$22	Synchronicity	2.0	512KE/3.2	12/89	\$
he Programmer's	2.0	1MB/6.02		\$10	Systat	5.0	1MB/6.0		\$
Online Companion			JUL DE		Teacher's Rollbook ★	2.2	512K/3.2		\$
ropsForms	2.0	1MB/6.03		Free	Ternary Plot	3.0	512K/3.2		
Prototyper *	2.01	1MB/4.1	9/89	\$79	TextPert ★	3.01	1MB/6.0		F
Publish or Perish	3.0	512KE/3.2		\$10	TGRAF-07/Mac	2.0	2MB/6.0	9/89	ľ
'yro	4.0	512K/4.1		\$15	Think C	4.0	1MB/5.0	2/90	
JuarkXPress	2.12	1MB/6.02		•	Timbuktu	3.0	1MB/4.1		F
luicken *	1.5	512K/3.2	1/90		TimeMinder	2.0	1MB/4.2	9/89	\$
hickLetter *	1.02	512KE/3.2	10/89	Free	Timeslips III	1.1	512KE/4.2	2/90	\$
DuickMail	2.0	512KE/3.2		•	TML Pascal II	3.0	1MB/5.0		5
DuickShare	2.0	512KE/3.2		\$75	TMON ★	2.8.4	512K/4.0		
DuickShot *	2.1	1MB/4.2		\$5	TOPS/Mac	3.0	512K/3.2		
RagTime 3	L	2MB/6.0		\$150	Trapeze *	2.1	1MB/6.0		\$
leal Estate Edge	2.0	1MB/6.03		Free	TrueBASIC ★	2.02	1MB/6.0		F
Read-It OCR	2.1	1MB/6.03	12/89		TrueForm *	1.1	1MB/6.2	4/90	F
Reports *	1.2	1MB/6.0		Free	Turbosynth	2.0	1MB/6.03		\$
Retail Engina	3.0	1MB/6.0	and i		Typeface Library	1.5	1MB/6.03		
Sales Associate	1.10	1MB/6.03		Free	TypeStyler	1.01	1MB/4.1		,
ales and Market	2.0	1MB/6.0		\$49	UNITize *	1.3	512KE/3.2	10/89	\$
orecasting Toolkit					UpBeat	2.0	1MB/6.0		\$
SAM	1.3	1MB/6.0	1/90	-	VersaCAD/	2.11	1MB/6.0		F
ScheduleMaker *	3.01	1MB/6.0	7, 3, 7	\$25	Macintosh Edition ★	201.0	-		
icreenSnap *	2.2	A STATE OF THE STATE OF		*	Virex *	2.5	1MB/4.2	1/90	
crienanap w CriptEdit	1.1	1MB/4.2 1MB/6.04	3/90		Virtual	2.0	1MB/3.2	10/89	F
6	1000	2122	3/30		The second secon			15.5	
Second Sight	2.0	1MB/6.02	-	\$33.75	Voyager	1.2	1MB/6.0	4/90	_
Sentinel	2.0	512K/4.1		\$20	VMacS	2.0	1MB/6.0		5
Shanghai	2.0	1MB/6.02	2/90	\$13	Wall Street Investor	3.0	1MB/5.0		3
impleSpan	2.5	512K/3.2		*	White Knight	11	1MB/6.02		\$
imart Alarms	2.9.1	512K/3.2		\$12	Wingz *	1.1	1MB/6.0		F
imartForm Assistant *	1.1	1MB/6.0	1	Free	Word Finder	2.0	512K/3.2		
martForm Designer	1.1	1MB/6.0	7/89	Free	WordPerfect for	1.0.3	1MB/4.2		F
martScrap & The Clipper	2.0	1MB/6.03	8/89	\$20	the Macintosh *				
inap ★	3.1	1MB/3.0	9/89		WorksPlus Spell	2.0	1MB/6.03	1/90	

To have products listed in this section, send upgraded software, an outline of changes since the previous release (indicate if it's a maintenance upgrade), upgrade price, minimum RAM and system software, suggested retail price, company name, mailing address, and phone number to Updates, Macworld, 501 Second St., San Francisco, CA 94107.

## If You Buy A Scanner For Desktop Publishing, You're Only Getting Part Of The Picture.



## PRODUCT INDEX

READER SERVICE NUMBER

#### Software

#### BUSINESS

- Absolute Solutions, 116 138 Casady & Greene, Inc., 80
- Checkmark, 209B
- Computer Associates, 232
- Dantz Development, 24 259
- 152 Fox Software, 225
- Innovative Data Design, 93
- Microsoft, IFC-1, 94-95, 184, 272-273, 298-299
- Now Software, 60
- 162 Odesta, 12 229
- Paracomp, 77 42 Personal Training Systems, 31
- QMS/Imagen Corp., 200 104
- SAS Institute, 214 163
- Scitor Corp, 122
- Shana Corporation, 281
- Silicon Beach Software, 57
  - SNA, Inc., 36
- SPSS, 189
- Symantec, 267, 269
- T.B.S.P., 74 135
- 55 Zedcor, 280

#### VERTICAL

- 203 Absolute Solutions, 116
- Checkmark, 209B
- Computer Logics, 56 Personal Training Systems, 31
- Scitor Corp, 122
- Symantec, 63
- 237 Symantec, 267, 269
- 135 T.B.S.P., 74

#### DATA MANAGEMENT

Zedcor, 280

#### WORD PROCESSING

- Lexpertise, 260
- Paragon, 284 253
- Sensible Software, 65 T/Maker, 16 332
- Zedcor, 280

#### CAD/CAM

- Deltasoft, 196
- Deltasoft, 196
- MathSoft, Inc., 55

#### COMMUNICATION

- CE Software, 239
- CheckFree Technologies, 27
- 281 DataViz, 38
- 129 La Cie, 53
- Pinnacle Micro, 103
- 184 Prometheus, 216A
- Software Ventures, 9
- Traveling Software, 106

#### EDUCATIONAL

- Lexpertise, 260
- MacAcademy, 211
  - Personal Training Systems, 31

- Adobe, 64, 289
- Image Club, 28, 34, 282
- QMS/Imagen Corp., 200
- TypeXpress, 76

#### GRAPHICS/DESKTOP PUBLISHING

- Adobe, 236
- Bitstream, 92
- Deneba Software, 234
- Image Club, 28, 34, 282

## READER SERVICE NUMBER

- Innovative Data Design, 93
- Lexpertise, 260
- Metro Image Base, 72
- Paracomp, 39 213
- 220 Paracomp, 77 104 QMS/Imagen Corp., 200
- 178 Radius, 6-7
- RasterOps, 114-115 91
- 67 Seiko Instruments, 13
- 297 Shana Corporation, 281
- Silicon Beach Software, 57 Supermac Technology, 10-11

#### PERSONAL RUSINESS/HOME

- Absolute Solutions, 116
- CheckFree Technologies, 27

#### ENTERTAINMENT

Spectrum Holobyte, 24

#### NETWORKING

- 129 La Cie, 53
- Shiva, 5
- Traveling Software, 106

#### UTILITIES

- Casady & Greene, Inc., 80
- 130 CE Software, 22
- 357 Central Point Software, 52
- Dantz Development, 24 259
- 277 Fifth Generation Systems, 108
- Fifth Generation Systems, 108 250
- Fifth Generation Systems, 110
- Fifth Generation Systems, 110
- Fifth Generation Systems, 264 Fifth Generation Systems, 264 247
- GDT Softworks, 296 439
- 129
- La Cie, 53
- 335 Now Software, 60 96
- Symantec, 63 Symantec, 267, 269 237

#### MISCELLANEOUS

- 16 Casady & Greene, Inc., 8
- Checkmark, 209B
- Computer Logics, 56 GDT Softworks, 296 439
- 274 QMS/Imagen Corp., 54
- 135 T.B.S.P., 74

#### Hardware

#### COMPUTER SYSTEMS

- Apple Computer, 294
- Dynamac, 259
- Hardware Express, 305 262
- MacFriends, 32 MacFriends, 102
- 361 MacFriends, 195
- 270 Macfriends, 263
- Outbound Systems, Inc., 20-21

- Agfa-Compugraphic, 58-59
- Diconix, 227 GCC Technologies, 66-67
- 305 GCC Technologies, 35
- 153 GCC Technologies, 68-69
- 119 GCC Technologies, 71
- Hewlett-Packard, 244-245
- Hewlett-Packard, 246-247 Hewlett-Packard, 248-249
- Hewlett-Packard, 250-251 343
- 342 Lasermax, 112 MacFriends, 263 270

301

Mirror Technologies, 124-125 424

Hewlett-Packard, 252-253

Mitsubishi, 193

## READER SERVICE NUMBER

- NEC Technologies, 240-241
- Newgen, 26
- 151 OCE' Graphics, 202
- 143 Tektronix, 283
- 313 Texas Instruments, 14-15

- Daystar Digital, 256
- Daystar Digital, 256
- National Semiconductor, 209A

#### DIGITIZERS/SCANNERS

- Caere Corporation, 262W
- Calcomp, 254-255
- Canon, 62
- Chinon America, Inc., 291
- 288 Hewlett-Packard, 244-245
- 299 Hewlett-Packard, 246-247
- 344 Hewlett-Packard 248-249
- Hewlett-Packard, 250-251 343
- Hewlett-Packard, 252-253 301
- 145 La Cie, 261 Nikon, 191 268

- DISPLAY E-Machines, 98-99
- Ehman, Inc., C3-C4
- In-Focus, 118-119
- Mirror Technologies, 124-125 424
- Mitsubishi, 193 178 Radius, 6-7

- MODEMS
- Computer Friends, 305 Prometheus, 216A
- Shiva, 5

- HARD DISK/STORAGE Braemar Corp. 30
- 217 Braemar Corp, 30
- 98 Cranel, Inc., 216B 154 Ehman, Inc., C3-C4
- EMAC, 220 110
- EMAC, 220 455
- GCC Technologies, 66-67 318
- GCC Technologies, 68-69 153 GCC Technologies, 71
- Iomega, 78-79 260
- 197 La Cie, 25
- 199 La Cie, 75 224 Liberty Systems, 303
- 465 MacProducts, 301 MicroNet Technology, 96
- MicroNet Technology, 285 Micronet Technology, 96
- Microtech International, 242 Mirror Technologies, 124-125
- Pinnacle Micro, 103
- 334 Priam Corp., 207
- 149 Rodime, 213
- 127 Storage Dimensions, 198 414 Storage Dimensions, 198

#### Tecmar, 120 321

166

239

- MacProducts, 301 RasterOps, 114-115
- Supermac Technology, 10-11 SOFTWARE SECURITY DEVICE

Software Security, Inc., 37

16 Casady & Greene, Inc., 8 335 Now Software, 60 Secure-It. 56

#### INPUT DEVICES

#### 426 MicroTouch, 100-101

## READER SERVICE NUMBER

- MicroTouch, 100-101 Wacom Co., Ltd., 286

- MISCELLANEOUS
- Computer Friends, 305
- In-Focus, 118-119 63
- 205 Linotype, 218 Mitsubishi, 278-279 52
- Traveling Software, 106 304

#### Varityper, 274 Accessories

FURNITHRE

#### Anthro Corp., 4

- SERVICES
- CheckFree Technologies, 27 Quantum/America On-Line, 33
- 293 Safeware, 36

- MISCELLANEOUS 315 ACCO, 126
- 61 Computer Friends, 305
- IDG World Expo Mktg Srvs., 297
- Kensington Microware, 271
- Kensington Microware, BC MacAcademy, 211
- Macworld Expo, Boston, 276-277

402

#### 3M, 231

- Mail Order
- Beverly Hills Computer, 300
- CDA Computer Sales, 179-183 CompuAdd, 104-105
- Diskette Connection, 303 Dr. Mac, Inc., 310-311
- 368 Hard Drives International, 304
- Hardware Express, 305
- MacConnection, 40-51 498 MacExpress, 313
- 262 MacFriends, 32

70

- 58 MacFriends, 102
- 361 MacFriends, 195 MacFriends, 263 270
- MacLand, 306-309 264 465 MacProducts, 301

MacZone, The, 128-135

Programs Plus, 204-205

- MacShopper, 228
- MacTel Technology Corp., 312 MacWarehouse, 81-91

442 The Texas Express, 302

## MACWOR

#### FREE PRODUCT INFORMATION

251 252 253 254 255 256 257 258 259 260 13 14 15 16 17 18 19 20 261 262 263 264 265 266 267 268 269 270 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 43 44 45 46 47 48 49 301 302 303 304 305 306 307 308 309 310 62 63 64 65 66 67 68 69 70 311 312 313 314 315 316 317 318 319 320 72 73 74 75 76 77 78 79 80 321 322 323 324 325 326 327 328 329 330 71 82 83 84 85 86 87 88 89 90 331 332 333 334 335 336 337 338 339 340 93 94 95 96 97 98 99 100 341 342 343 344 345 346 347 348 349 350 101 102 103 104 105 106 107 108 109 110 351 352 353 354 355 356 357 358 359 360 111 112 113 114 115 116 117 118 119 120 361 362 363 364 365 366 367 368 369 370 121 122 123 124 125 126 127 128 129 130 371 372 373 374 375 376 377 378 379 380

131 132 133 134 135 136 137 138 139 140 381 382 383 384 385 386 387 388 389 390 141 142 143 144 145 146 147 148 149 150 391 392 393 394 395 396 397 398 399 400 151 152 153 154 155 156 157 158 159 160 401 402 403 404 405 406 407 408 409 410 161 162 163 164 165 166 167 168 169 170 411 412 413 414 415 416 417 418 419 420 171 172 173 174 175 176 177 178 179 180 421 422 423 424 425 426 427 428 429 430

191 192 192 194 195 196 197 198 199 190

431 432 433 434 435 436 437 438 439 440 191 192 193 194 195 196 197 198 199 200 441 442 443 444 445 446 447 448 449 450 201 202 203 204 205 206 207 208 209 210 451 452 453 454 455 456 457 458 459 460 211 212 213 214 215 216 217 218 219 220 461 462 463 464 465 466 467 468 469 470 221 222 223 224 225 226 227 228 229 230 471 472 473 474 475 476 477 478 479 480 231 232 233 234 235 236 237 238 239 240 481 482 483 484 485 486 487 488 489 490 241 242 243 244 245 246 247 248 249 250 491 492 493 494 495 496 497 498 499 500

501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550

#### CATALOG INFORMATION

551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600

601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650

651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700

#### WHERE TO BUY

701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750

751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850

851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900

Please print or type all information

Company

Address

City, State, Zip (Zip code needed to ensure delivery)

Phone: Area Code/Number

Fax Number



Check box and fill in the appropriate information to subscribe to Macworld. You will be billed \$24.95 for a 1-year (12 issue) subscription (U.S. only)

Expires AUGUST 20, 1990

SI

JUNE 1990

#### FREE PRODUCT INFORMATION

Get more valuable information about the products which interest you. There's no cost; no obligation.

Simply print your name, title, address (with zip), telephone number and fax number (if available). Circle the numbers on the card for the products which interest you.

Mail the card. We pay the postage! For even faster results, fax to 413-637-4343.

Numbers for advertised products can be found in the ad and in both the Product Index and the Advertiser Index. Products mentioned editorially can be found in the "Where to Buy" section.

## MACWOR

#### FREE PRODUCT INFORMATION

33 34 35 36 37 38 39 40 42 43 44 45 46 47 48 49 52 53 54 55 56 57 58 59 60 62 63 64 65 66 67 68 69 70 72 73 74 75 76 77 78 79 80 82 83 84 85 86 87 88 89 90 93 94 95 96 97 98 99 100

12 13 14 15 16 17 18 19 20

23 24 25 26 27 28 29 30

22

101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150

151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200

201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250

301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350

251 252 253 254 255 256 257 258 259 260

261 262 263 264 265 266 267 268 269 270

271 272 273 274 275 276 277 278 279 280

281 282 283 284 285 286 287 288 289 290

291 292 293 294 295 296 297 298 299 300

351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400

401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450

451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500

501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550

#### **CATALOG** INFORMATION

551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600

601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650

651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700

#### WHERE TO BUY

711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750

751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800

801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850

851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900

Please print or type all information

Title

Company

Address

City, State, Zip (Zip code needed to ensure delivery)

Phone: Area Code/Number

Fax Number



Check box and fill in the appropriate information to subscribe to Macworld. You will be billed \$24.95 for a 1-year (12 issue) subscription (U.S. only)

Expires AUGUST 20, 1990

**JUNE 1990** 



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

### **BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

## MACWORLD

Reader Service Department P.O. Box 5299 Pittsfield, MA 01203-9906





NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

#### **BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

## MACWORLD

Reader Service Department P.O. Box 5299 Pittsfield, MA 01203-9906



## ADVERTISER INDEX

READER SERVICE NUMBER		READER SERVICE NUMBER		READER SERVICE NUMBER		READER SERVICE NUMBER	
80	Abbott Systems, 70	154	Ehman, Inc., C3-C4	498	MacExpress, 313	44	Programs Plus, 204-205
203	Absolute Solutions, 116	110	EMAC, 220	262	MacFriends, 32	184	Prometheus, 216A
315	ACCO, 126	455	EMAC, 220	58	MacFriends, 102	274	QMS/Imagen Corp., 54
_	Adobe, 64, 236, 289	277	Fifth Generation Systems, 108	361	MacFriends, 195	104	QMS/Imagen Corp., 200
_	Agfa-Compugraphic, 58-59	278	Fifth Generation Systems, 108	270	MacFriends, 263	_	Quantum/America On-Line, 33
_	Anthro Corp., 4	250	Fifth Generation Systems, 110	264	MacLand, 306-309	178	Radius, 6-7
-	Apple Computer, 294	364	Fifth Generation Systems, 110	465	MacProducts, 301	91	RasterOps, 114-115
5	Beverly Hills Computer, 300	245	Fifth Generation Systems, 264	440	MacShopper, 228	149	Rodime, 213
511	Bitstream, 92	247	Fifth Generation Systems, 264	142	MacTel Technology Corp., 312	293	Safeware, 36
41	Braemar Corp, 30	152	Fox Software, 225	78	MacWarehouse, 81-91	163	SAS Institute, 214
217	Braemar Corp, 30	305	GCC Technologies, 35	-	Macworld Expo Boston, 276-277	328	Scitor Corp, 122
230	Caere Corporation, 262W	318	GCC Technologies, 66-67	70	MacZone, The, 128-135	239	Secure-It, 56
122	Calcomp, 254-255	153	GCC Technologies, 68-69	34	MathSoft, Inc., 55	67	Seiko Instruments, 13
164	Canon, 62	119	GCC Technologies, 71	333	Metro Image Base, 72	396	Sensible Software, 65
16	Casady & Greene, Inc., 8	439	GDT Softworks, 296	3	MicroNet Technology, 96	297	Shana Corporation, 281
138	Casady & Greene, Inc., 80	-	Hard Drives International, 304	116	MicroNet Technology, 285	_	Shiva, 5
32	CDA Computer Sales, 179-183	509	Hardware Express, 305	-	Microsoft, IFC-1, 94-95, 184,	298	Silicon Beach Software, 57
130	CE Software, 22	288	Hewlett-Packard, 244-245		272-273, 298-299	-	SNA, Inc., 36
338	CE Software, 239	299	Hewlett-Packard, 246-247	90	Microtech International, 242	463	Software Security, Inc., 37
357	Central Point Software, 52	344	Hewlett-Packard, 248-249	426	MicroTouch, 100-101	48	Software Ventures, 9
-	CheckFree Technologies, 27	343	Hewlett-Packard, 250-251	449	MicroTouch, 100-101	_	Spectrum Holobyte, 24
-	Checkmark, 209B	301	Hewlett-Packard, 252-253	424	Mirror Technologies, 124-125	210	SPSS, 189
8	Chinon America, Inc., 291	_	IDG World Expo Mktg Srvs., 297	52	Mitsubishi, 278-279	127	Storage Dimensions, 198
_	CompuAdd, 104-105	_	Image Club, 28, 34, 282	65	Mitsubishi, 193	414	Storage Dimensions, 198
10	Computer Associates, 232	63	In-Focus, 118-119	196	National Semiconductor, 209A	166	Supermac Technology, 10-11
61	Computer Friends, 305	508	Innovative Data Design, 93		NEC Technologies, 240-241	96	Symantec, 63
103	Computer Logics, 56	260	Iomega, 78-79	316	Newco Technology, 19	237	Symantec, 267, 269
98	Cranel, Inc., 216B	_	Kensington Microware, 271	409	Newgen, 26	135	T.B.S.P., 74
259	Dantz Development, 24	30	Kensington Microware, BC	268	Nikon, 191	332	T/Maker, 16
281	DataViz, 38	197	La Cie, 25	335	Now Software, 60	321	Tecmar, 120
404	Daystar Digital, 256	129	La Cie, 53	151	OCE' Graphics, 202	143	Tektronix, 283
477	Daystar Digital, 256	199	La Cie, 75	162	Odesta, 12	313	Texas Instruments, 14-15
241	DCA, 222-223	145	La Cie, 261	75	Outbound Systems, Inc., 20-21	442	The Texas Express, 302
336	Deltasoft, 196	342	Lasermax, 112	213	Paracomp, 39	402	3M, 231
346	Deneba Software, 234	183	Lexpertise, 260	229	Paracomp, 77	304	Traveling Software, 106
271	Diconix, 227	224	Liberty Systems, 303	253	Paragon, 284	279	TypeXpress, 76
79	Diskette Connection, 303	205	Linotype, 218	42	Personal Training Systems, 31	483	Varityper, 274
368	Dr. Mac, Inc., 310-311	406	MacAcademy, 211	287	Pinnacle Micro, 103	507	Wacom Co., Ltd., 286
226	Dynamac, 259	_	MacConnection, 40-51	334	Priam Corp., 207	55	Zedcor, 280
303	E-Machines, 98-99						



## The next discovery could be yours... on an EARTHWATCH expedition

Working with volunteers of all ages, help monitor coral reef in Belize... Help survey Inca architecture and landscaping in mountainous Peru... Help an archaeologist survey a newly discovered Maya ceremonial center.

#### Dozens of expeditions on six continent

Right now, over 100 Earthwatch expeditions are being mounted in every scientific discipline, bound for points throughout the world. They'll be led by outstanding people, scientists who need your help. As a team member, you'll be helping to fund the expedition you accompany.

You can expect an intense learning experience with a lot of challenges. You'll be taught in the field by professionals. A background in science isn't necessary. You'll learn as you go.

#### Join Earthwatch as a member

As an Earthwatch member, you'll receive a subscription to Earthwatch Magazine, the colorful chronicle of Earthwatch activities throughout the world. It contains descriptions and photos of all the expeditions. You'll also receive the Expedition News, the quarterly report of the latest findings from the field and news of upcoming expeditions.

You don't have to go on an expedition to be an Earthwatch member. But you do have to be an Earthwatch member to go on an expedition.

Don't delay. Whatever your interest, it all begins with membership. Your tax-deductible contribution of \$25 will make you a member.

## **EARTHWATCH**

(617) 926-8200

Dept. 900 • Box 403 • Watertown, MA 02272

# When you're developing things never seen before, you need a pecial set of tools.

There's a reason why Apple has always been recognized as the place where the most innovative software shows up first.

We match the incredible power of Macintosh® computers with the most sophisticated developer tools on the market to help people create powerful new applications.

And now, through Developer Tools Express and APDA, we're making these tools available to all developers.

So you have access to programs like Macintosh Programmer's Workshop and MacApp.®

These premier Macintosh development environments allow you to code applications in a variety of languages. Like C, Object Pascal and C++.

Or communications tools like MacWorkStation™ and CL/1™ that give you transparent access to data and

applications residing on remote computers.

And with its interactive nature, Macintosh Allegro Common Lisp™— a complete implementation of the Common Lisp standard — lets you model your application quickly and fill in the details later.

To find out how easy it can be to obtain these tools, call us today. We'll tell you more about Developer Tools Express, APDA customer services and our developer training programs.

Because giving you the power to be your best isn't the only thing we do at Apple. We give you the tools to turn the power on.

To get your hands on Apple® development tools, call 1-800-282-2732\*

The power to be your best.™





# WHERE TO BUY

#### A Guide to Products Featured in This Issue

This listing provides companies and phone numbers for products mentioned in this issue. Allow several weeks for responses to reader service card inquiries. Asterisks indicate vendors who prefer to be contacted by phone.

#### Reader Service

**701 3+Mail** 3Com Corp.; 408/562-6400, 800/638-3266.



#### 702 Abaton InterFax 24/96

Abaton, a Subsidiary of Everex Systems; 415/683-2226, 800/444-5321.

- 703 Address Book Plus Power Up Software Corp.; 415/ 345-5900, 800/851-2917.
- 704 Adobe Photoshop, Adobe Type Manager Aclobe Systems, Inc.;415/961-4400, 800/833-6687.
- 705 America Online Quantum Computer Services, Inc.; 703/448-8700, 800/227-6364.
- 707 Andrew Tobias Managing Your Money MECA Ventures Inc.; 203/226-2400.
- 708 AntiToxin Mainstay; 818/991-6540.
- \* Anti-Virus Kit 1stAid Software, Inc.; 617/ 783-7118, 800/843-3497.
- 709 AppMaker Bowers
  Development Corp.;
  508/369-8175.
- 710 Ashlar Vellum Ashlar; 408/746-2980.
- 711 Azimuth Graphsoft; 301/461-9488.



- 712 **cc:Mail** cc:Mail; 415/961-8800, 800/448-2500.
- 713 CD Companion Series

#### Reader Service

#### Ludwig Van Beethoven

The Voyager Company; 213/451-1383.

- 714 ColorQuick Ink-Jet Printer Tektronix, Inc.; 503/682-7377, 800/835-6100.
- 715 **Colorset** Studiotronics, Inc.; 407/657-0677, 800/780-3825.
- 716 CompuServe Navigator CompuServe, Inc.; 614/457-8600.
- 717 Connect Business Information Network Connect Inc.; 408/ 973-0110, 800/262-2638.
- 718 The Coordinator Action Technologies; 415/654-4444.
- 719 CopyFlow North Atlantic Publishing Systems, Inc.; 508/250-8080.



- 720 Data Desk Odesta Corp.; 708/498-5615, 800/323-5423.
- **721 DataShaper** BenWare Co.; 206/547-9623.
- **DaynaMail** Dayna Communications, Inc.; 801/531-0203.
- **Desktop Express** Dow Jones & Co., Inc.; 609/520-4000.
- 724 DeskWriter Hewlett-Packard; 800/752-0900.
- 725 Diconix M150 Plus
  Diconix, a division of
  Eastman Kodak, Inc.;
  800/342-6649.
- 726 Dimensions Presenter Visual Information Development, Inc.; 818/918-8834.
- 727 DynoDex Portfolio Systems, Inc.; 718/ 935-9501,800/729-3966.



Earthquake Preparedness
Stack Environmental
Compliance Associates;

#### Reader

408/659-2320, 800/266-2320.

- 728 ElectricImage Animation System Electric Image; 818/444-1819.
- **729 Epson LO-950** Epson America, Inc.; 213/ 539-9140, 800/922-8911.



- 730 FaceWare Pack FaceWare; 217/328-5842.
- 731 Freedom of Press Custom Applications, Inc.; 508/ 667-8585, 800/873-4367.



#### HARD DISKS

- 732 Advanced Gravis Computer Technology Ltd.; 604/434-7274, 800/663-8668.
- 733 Apple Computer, Inc.; 408/996-1010.
- 734 BSM; 214/699-8300.
- **735** CMS Enhancements, Inc.; 714/259-9555.
- 736 Crate Technology; 818/766-4001.
- 737 Deltaic Systems; 408/954-1055.
- 738 Dolphin Systems Technology; 714/558-3220.
- 739 Ehman, Inc.; 307/789-3830, 800/257-1666.
- 740 EMAC; 415/498-1111, 800/821-0806.
- 741 FWB, Inc.; 415/474-8055.
- 742 GCCTechnologies; 617/ 890-0880, 800/422-7777.
- Hard Drives International; 602/967-4999, 800/234-3475.
- 743 Heart Data Corp.; 818/ 998-1691,800/999-8133.
- 744 iDS Systems, Inc.; 408/ 441-0500, 800/733-0078.
- 745 Jasmine Technologies, Inc.; 415/282-1111.
- 746 La Cie, Ltd.; 503/684-0143, 800/999-0143.
- 747 Liberty Systems, Inc.; 408/983-1127.
- 748 MacProducts USA; 512/

#### Reader

343-9560,800/622-3475.

- 749 Maxcess; 215/928-1213, 800/356-2892.
- 750 MicroNet Technology, Inc.; 714/837-6033.
- 751 Microtech International, Inc.; 203/468-6223, 800/626-4276.
- 752 Mirror Technologies, Inc.; 612/633-4450, 800/654-5294.
- 753 PCPC; 813/884-3092.
- 754 Peripheral Land, Inc.; 415/657-2211, 800/288-8754.
- 755 Procom Technology, Inc.; 714/549-9449.
- 756 Relax Technology; 415/ 471-6112, 800/848-1313.
- 757 Rodime, Inc.; 407/994-5585.
- 758 Ruby Systems, Inc.; 415/ 967-1187, 800/888-1668.
- 759 Storage Dimensions, Inc.; 408/879-0300.
- 760 SuperMac Technology; 408/245-2202.
- 761 Tallgrass Technologies Corp.; 913/492-6002, 800/825-4727.
- 762 ToshibaAmerica Information Systems; 714/583-3000, 800/334-3445.
- 763 Westcom; 919/355-0902, 800/442-8591.
- 764 HyperCard Apple Computer, Inc.; 408/996-1010.



- 765 ImageWriter II, ImageWriter LQ Apple Computer, Inc.; 408/996-1010.
- 767 InBox TOPS; 415/ 769-9669, 800/445-8677.
- 768 Interactive Physics Knowledge Revolution; 415/553-8153.



769 JetLinkExpress GDT (continues)

Reader

Softworks, Inc.; 604/291-9121.



770 Know Your Stuff Working Systems, Inc.; 206/775-9999, 800/825-9999.



- 771 LaserJet IID Hewlett-Packard; 800/752-0900.
- 772 LaserJet IIP Hewlett-Packard; 800/752-0900.
- 773 LaserJet III Hewlett-Packard; 800/752-0900.
- 774 LaserWriter IINT, LaserWriter IINTX, LaserWriter IISC Apple Computer, Inc.; 408/996-1010.



- 777 MacAccess Action Technologies; 415/654-4444.
- 778 MacFlash Cards The Language Quest Software Co.; 415/941-2879.
- 779 MacInterface Holder, Egan & Company; 800/782-9976.

#### Reader Service

- 780 Macintosh Programmer's Workshop Apple Computer, Inc.; 408/996-1010.
- 781 MacJet QMS, Inc.; 205/ 633-4300, 800/631-2692.
- 782 Macknowledge Prometheus Products, Inc.; 503/624-0571, 800/477-3473.
- 783 MacPrint Insight
  Development Corp.;
  800/825-4115.
- **MacRenderMan** Pixar; 415/258-8100, 800/888-9856.
- 785 Master Tracks Pro 4
  Passport Designs, Inc.;
  415/726-0280.
- 786 Math Blaster Mystery
  Davidson & Associates,
  Inc.; 213/534-4070,
  800/556-6141.
- 787 MicroPhone II Software Ventures Corp.; 415/644-3232.
- \* Microsoft Mail Microsoft Corp.; 206/882-8080, 800/426-9400.
- \* Microsoft Office Microsoft Corp.; 206/ 882-8080, 800/426-9400.

#### Reader Service



- 788 Network Bundle TOPS, a Sun Microsystems company; 415/769-9669, 800/445-8677.
- 789 Network Courier Consumers Software, Inc.; 604/688-4548.



- **Panorama** ProVue Development Corp.; 714/892-8199.
- 791 **ParaFont** Design Science, Inc.; 213/433-0685.
- 792 Personal LaserPrinter II GCC Technologies; 617/ 890-0880, 800/422-7777.
- 783 Printer Interface III

  DataPak Software, Inc.;
  818/905-6419,
  800/327-6703.
- 794 Professional Programmer's Extender Invention Software Corp.; 313/996-8180.
- **795 Prograph** TGS Systems; 902/429-5642, 800/565-1978.
- 786 **Prototyper** Now Software, Inc.; 503/ 274-2800, 800/237-3611.



797 **QuickMail** CE Software, Inc.; 515/224-1995.



798 RecordHolderPlus
Software Discoveries,
Inc.; 203/872-1024,
800/437-5200.



- 799 **Sculpt 3D** Byte by Byte Corp.; 512/343-4357.
- 800 Serius89 Serius Corp.; 801/272-7788, 800/876-6847.
- 801 Slang Thesaurus Slippery Disks; 213/274-3600.
- 802 Smalltalk/V Mac Digitalk, Inc.; 213/645-1082, 800/922-8255.
- Microcomputer
  Products, Inc.;
  404/441-1617.
  Solarian Public domain.
- 805 Spectrum/24 Series III SuperMac Technology; 408/245-2202.
- 806 StrataVision3d Strata, Inc.; 801/628-5218,

#### Reader

800/678-7282.

807 Symantec AntiVirus for Macintosh (SAM) Symantec Corp.; 408/ 253-9600, 800/441-7234.



- 808 Think C Symantec Corp.; 408/253-9600, 800/441-7234.
- 809 ThinkPascal Symantec Corp.; 408/253-9600, 800/441-7234.
- 810 Toshiba Three-In-One (P321SLC) Toshiba America Information Systems, Inc; 714/ 583-3000, 800/334-3445.
- 811 TurboStar Nuvotech, Inc.; 415/331-7815, 800/232-9922.
- 812 TypeAlign Adobe Systems; 415/324-8080, 800/223-0417.



- 813 VersaTerm-Pro Synergy Software; 215/779-0522.
- 814 V.I.P. Mainstay; 818/991-6540.
- **815 Virex** HJC, a subsidiary of Microcom, Inc.; 919/490-1277.



- White Knight The FreeSoft Co.; 412/846-2700.
- 817 WordPerfect Office WordPerfect Corp.; 801/ 225-5000, 800/321-4566.
- B1B WriteImpact GCC Technologies; 617/ 890-0880, 800/422-7777.



819 Zterm Shareware by David P. Alverson.

Public domain software, freeware, and shareware are available through online information services; user groups (call 800/538-9696 ext. 500 for information on a local user group); or mailorder clearinghouses such as Budgetbytes (800/356-3551 for orders, 913/271-6022 in Kansas), Educomp (800/843-9497, 619/259-0255 in California), or the Public Domain Exchange (800/331-8125, 408/496-0624 in California).

# Printer Connectivity Is What We Do Best





JetLink Express:<sup>™</sup> The ultimate Macintosh® software printer driver for the HP LaserJet<sup>™</sup> series, HP DeskJet<sup>™</sup> series and HP compatible laser printers. JetLink Express includes 13 outline fonts. Features supported include: reduction, enlargement, gray scales, and more.

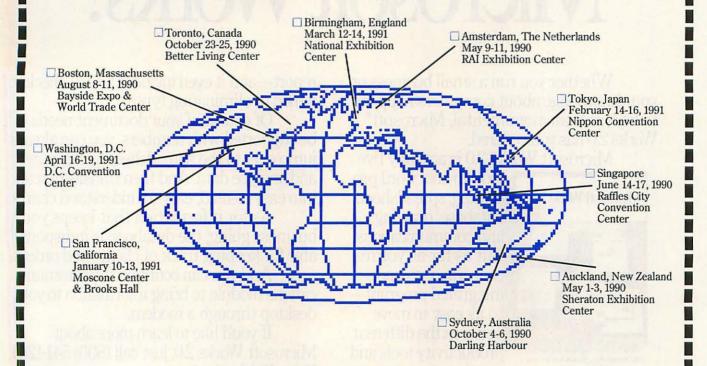
PrintLink Collection:™ A series of Macintosh software printer drivers which support the Epson LQ & FX series, Okidata 300 series, Panasonic 1000, 1100 and 1500 series, NEC Pinwriter series and Diconix 150 & 300, Supports Adobe Type Manager.™



P.O. Box 1865, Point Roberts, WA 98281 Inquiries: (604) 291-9121 Orders: 800-663-6222

JetLink Express, PrimtLink Collection and the GDT Starburst logo are trademarks of GDT Softworks Inc. All names and logos are trademarks or registered trademarks of their respective holders.

# MACWORLD Expo offers you a world of opportunity. In every corner of the world.



Wherever you find MACWORLD Expo, you'll find the opportunity to reach thousands of current and future Macintosh computer users — from Auckland to Amsterdam, Singapore to San Francisco, Toronto to Tokyo, Boston to Birmingham, and everywhere in between.

MACWORLD Expo is the original Macintosh computer show and it's still the best. It's where those in the know and those who want to grow gather to share tips and techniques... to exchange ideas... to see, try, and buy the latest in Macintosh software, hardware, peripherals, services, and more.

Don't miss out on this opportunity to appear before the largest audience of Macintosh buyers anywhere in the world.

For information about exhibiting at any of the MACWORLD Expos listed above, mail this ad to: Mitch Hall Associates, 260 Milton St., Dedham, MA 02026. Can't wait? FAX us at (617) 361-3389.

And take advantage of a world of opportunity.

Yes I'm interested in finding out more about exhibiting at all the MACWORLD Expos checked above. Please send me information.

Name	
Title	
Company	
Street	
City/Town	
State/Province	
Zip/Postal Code	
Country	
Telephone	
Fax	MW

MACWORLD Expos are independent trade shows produced by World Expo Corporation and managed by Mitch Hall Associates and other companies affiliated with World Expo Corp. MAC, MACINTOSH and MACWORLD are trademarks of Apple Computer, Inc.

# How do you explain the magnitude of Microsoft Works?

Whether you run a small business or your knowledge about computers happens to be less than monumental, Microsoft® Works 2.0 has you covered.

Microsoft Works 2.0 is actually five



You get five programs in one and incredible efficiency when you combine their talents.

tools in one: word processing, spreadsheet, database, drawing and communications. But as far as you're concerned, it's one integrated program—so it's easy to move between the different productivity tools and use them together.

In fact, from the moment you take it out of the box, Microsoft Works 2.0 is easy to use. It comes with an animated training program written in HyperCard® format. As well as on-line help and unlimited phone support to help answer any questions you may have about Works' features.

No matter how varied your projects are, Microsoft Works 2.0 can handle the job. Its newest feature, the drawing module (with page layout), can take an otherwise dull, fact-filled document and turn it into one full of compelling graphics.

The word processor can create everything from a simple memo to a detailed report—and it even includes a spell-checker aimed at eliminating typos.

Of course, if your document needs to be supported with numbers, you can always jump over to the spreadsheet to compute and analyze data. And then transform it all into easy-to-read, easy-to-understand charts.

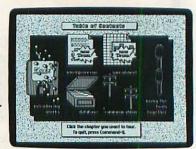
As for information that keeps your business going, the database is indispensable for keeping track of clients and orders.

And you can count on the communications module to bring information to your desktop through a modem.

If you'd like to learn more about Microsoft Works 2.0, just call (800) 541-1261,

Dept. I76 for the name of your nearest dealer.

No wonder Microsoft Works 2.0 is the best selling application in its class. Aside from being a great value,



To help get you started, we've included an animated training program written in HyperCard format.

Microsoft Works 2.0 is one program that can handle a myriad of business needs.

It's that simple.

Microsoft
Making it all make sense

# It's simple.



#### Lowest Lending Rates Since 1983!

Last week mortgage interest rates reached a five-year all-time low. First Montgage of-fered a 30-year, 95 percent new home loan at S.5 percent with no points. Unheard of in re-cent years.
 Resale of homes has jumped 13 percent

over sales recorded during the same period

Several local lenders have put together spe-cial new home financing packages in coop-eration with local contractors. Call our Aspen office at (426) 838-2961 for details.

#### Crown Construction Opens This Year's Alpine Woods Development

The Alpine Woods development will be open for public tours from July 15 until August 21. Each home represents a distinct style from contemporary to French provincial—all homogeneously placed to create a uniquely attractive neighborhood.



Each home has been fully decorated by a local interior design firm and each is singu

just shopping for ideas, we recommend this year's Alpine Woods development.

You can park at the Denny Shopping Center and take a tour bus from there be tween 9:00 a.m. and 6:00 p.m. daily.

#### HOME OF THE MONTH

Lakefront Country House: Designed for Entertaining!



This lovely brick and cedar country house can be found just lifteen-minutes from down-town Aspen. Nestled in giant firs, it repre-sents true Colorado style!

The master bedroom suite features a panoramic view of Lake Diamond. The master suite also has his-and-hers walk-in closets, a separate vanity, and a stunning shower area made of glass bricks. The living room, study, family room, and bedrooms (2+) feature hand-polished red-

bedrooms (2+) feature nand-poissned red-wood panelling and skylights.

The three-ear garage has special wall-mounted ski racks and an extra-sized third stall to accommodate up to a 24-foot boat.

Two additional baths, a stone fireplace, 800 square feet of decking, three wooded

acres, and a private dock complete this rural

The Horvath Family 445 28th Street St. Louis, MO 88990

David Doyle 6767 Diamond Place Aspen, CO 54555

The Steffs # 14 Lamplighter Lane Ridgefield, VT 29333

The Horvath Family 445 28th Street St. Louis, MO 88990

David Doyle 6767 Diamon 6767 Diamond Place Aspen, CO 54555 The Stefls # 14 Lamplighter Lane Ridgefield, VT 29332

The Horvath Family 445 28th Street St. Louis, MO 88990

David Doyle 6767 Diamond Place Aspen, CO 54555

Greg Voornas 1013 Scott Road Boston, MA 31222



July 28, 1988

Gary and Lisa Elliot 533 4th Street Denver, CO 54556

Dear Gary and Lisa,

This Saturday, I look forward to showing you a few of the quality homes in the Aspen

This Saturday, I look forward to showing you a few of the quality homes in the Aspen community.

Per our phone conversations, we will be looking at family homes with a minimum of four bedrooms, two-and-s-half baths, a family mon, and a three-car garage. It is countd like you are a pretry active family, so I've also chosen homes with a "mud room" for changing wet boots, etc.

One issue that we haven't really discussed is schools. Before Saunday, you might want to jot down a few priorities. Public, private, parochial? Level needed-from pre-school to college. And any special needs you children may have, like proximity to an indoor pool or gym.

I can also put you in tooker with any youth organizations you may be interested in like The Boy Scouts or 4-H. We have it all.

You mentioned wanting a fairity good-sized lot. Does this mean that you will need stables or a barn? I can even put you in stotch with a local riding stable if you wish.

Since you plan to be here for the whole weekend, let me know if I can be of any help with hotel reservations or activities. I can arrange for anything from theatre tickets to a riding lesson.

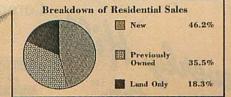
It's a beautiful place and we're happy that you've decided to make it your home.



#### COMMISSIONED SALES REPORT-JUNE

Sales Person	Туре	Rate	Sales YTD	Billings	Check Aml.
		2.000	\$275,000	\$88,000	\$3344.00
Shannon Pitts	Commercial	3.80%			100000000000000000000000000000000000000
Lisa Doan	Residential	3.00%	\$320,000	\$120,000	\$3600.00
Peter Cohen	Residential	3.00%	\$230,000	\$100,000	\$3000.00
Robbie Ross	Commercial	4.00%	\$500,000	\$340,000	\$13600.00
Mike Lucero	Residential	4.00%	\$150,000	\$65,000	\$2600.00
Gary Gigor	Residential	7.00%	\$700,000	\$260,000	\$18200.00
Mary Freeman	Residential	3.80%	\$450,000	\$60,000	\$2280.00
Joan McAnhur	Residential	2.60%	\$250,000	\$99,000	\$2574.00
Barbara Miller	Commercial	3.00%	\$250,000	\$130,000	\$3900.00
Robyn Komachi	Commercial	2.80%	\$780,000	\$240,000	\$6720.00
	Residential		704,000		
			70 T 100	The street	

325,000 46.16% 35.51% Prev. Owned 250,000 129,000



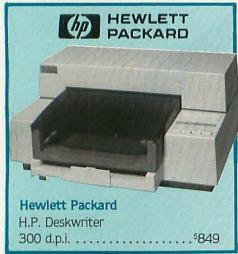
Everything you see above was created using some combination of the five tools within Microsoft Works 2.0: word processing, spreadsheet, database, drawing and communication. As you can see, the real power of Microsoft Works 2.0 comes into play when all the tools are used together.

## PRINTERS & MONITORS



#### **EPSON Letter Quality Printers**

LQ-510*(24 PIN)	.\$328
LQ-850, LQ-950, LQ-1050, LQ-2550	Call
EPSON LQ Printer Software	\$59
(*Requires Serial Card)	



Hewlett Packard PaintJet..... \$1298

#### Hard Drives

CMS Externals

CIVID LACCITIAIS
MacStack 2032ms
MacStack 3028ms
MacStack 4528ms
MacStack 6038ms
MacStack 8028ms
PD 10025ms
PD 17018ms
44 Megabyte Removable \$798

#### CMS Internals (SF II IIcy IIci)

(SE, II, IICA, IICI,							
40 Megabyte .							\$448
100 Megabyte					 		\$848
200 Megabyte					 	٠.,	\$1498
UNIMAC Kits.					 		Cal
<b>Cutting Edge</b>							
Tape Back-up	Sys	ste	m	S			
CMS TS-6060	Me	ea	20	012	 	¥ 270	\$698





GCC PLP Las	ser								s1595
PLP Plus Las	er								\$1695

Call for Systems/Simms Pricing

#### Monitors



640 x 480 Resolution . . . . . . . . \$509 Fine Dot Pitch, Tilt & Swivel Base

#### E-Machines

Big Picture Z-21 \$1798
Big Picture Z-21 IQ \$2598
Big Picture T-16 color \$2898
Big Picture T-19 color \$4398
NEC MacSync\$498
Radius
Full Page Display \$1095
Other Models
Raster Ops
Colorboard 264/2\$699
Boards/MonitorsCal
Sigma Designs
Pageview SE 15"\$798
Silverview 21"\$1598
Silverview 21" (GS) \$2398
Sony 1304\$698
Datadesk Keyboard
Mac 101 or ADB version\$129
Keytronics Keyboard
MacPro\$119

# Beverly Hills Computer

#### Computer professionals since 1975.









## 1-800-426-8166

Beverly Hills 2400 External . . . . . . \$129 Beverly Hills 2400 Internal ......\$299

Fax Machine From Beverly Hills (213)675-2522 (213)273-3710

279 South Beverly Drive, Suite 1200, Beverly Hills, California 90212

- Plain and simple. Hardware: your satisfaction guaranteed or your money back. Software: defective software will be replaced
- Manufacturers policies prohibit us from offering refunds on opened software.

  We accept most major credit cards with no surcharge added.

- · Please allow 10 days for personal and company checks to
- . C.O.D. orders accepted.
- · We gladly accept purchase orders from most major
- International orders accepted.
   Cellfornia, Texas, Georgia and Arizona residents please add the appropriate local sales tax.
   To place orders call Monday thru Friday 7AM to 6PM P.S.T.
   Prices and availability subject to change.

All items in stock will ship in 24 hours. We offer daily service from Federal Express, UPS, U.S. Postal Service. Call for handling and shipping fees. Minimum shipping charge \$4.00



## **■□■MacProducts USA**



#### **UPGRADES**



1MB SIMM's 70/80/100 ns	\$69
4MB SIMM's	call
Lifetime Manufacturer's Warranty!	
Laptop SIMM's	call
256K SIMM's	\$24
Magic SCSI	\$69
128K-512K Upgrade	\$149
128K-1024K (1 MB) Upgrade	\$295
512K-1024K (1 MB) Upgrade	\$299
512K-2048K (2 MB) Upgrade	\$399
512K-4096K (4 MB) Upgrade	\$599
800K Drive and ROM's	\$299
SE/30 Upgrade	\$1399

#### MAGICNET

100% Flash Box, Phone Net, Local Talk compatible 17.00

#### 030 Accelerators

RailGun 16 mhz 68030 +, SE	\$499
RailGun 25 mhz 68030 +, SE	\$799
RailGun 33 mhz 68030 +, SE	\$999
RailGun 50 mhz 68030/68882	\$2249
RailGun IIci Cache	\$699
68881, 68882 Co-Processors	\$125/\$199
PMMÚ - 68851	\$129
020 Available now Call for a	nama info

030 Available now. Call for more info. Run System 7.0 on 512, Mac + and SE

#### STORAGE & BACK-UP



#### MAGICMODEM



100% Hayes Compatible - Auto Dial/ Auto Answer 2400/1200/300 Baud -2-Year Warranty \$8 Magic SendFax \$9

#### DISPLAY SOLUTIONS

19" B&W Monitor - 2 Pg Display.
72 dpi, 78 hz. Includes card \$899
Plus Version \$999
13" & 14" 100% Apple Compatible
8 bit color card for SE/30 \$349
19" 8 bit color card for Mac II series \$499
14" Magnavox color monitor \$499

#### **MAGIC PRINTERS**



QuickDraw Printer \$1295 PostScript" Compatible Printer \$2695

#### SYSTEMS

Mac SE 1.44	\$1795
Mac SE/30	\$2799
Mac IIcx	\$3249
Mac IIci	\$4449
Laptop	\$4399
Mac IIfx	cál
All systems and perio	herals available

nty \$85 All systems and peripherals available.

Call for configurations and best prices.

#### SOFTWARE

SOFTWAR	E
4th Dimension	469
ATM	56
ATM Plus	108
Adobe Fonts	40% off!!
Adobe Illustrator 88	285
Adobe Illustrator 88 Adobe PhotoShop Adobe TypeSet 1 or 2	502
AfterDark	58 call
At the Playroom	27
Canvas	185
DOS Mounter	58
Flash	129
Freehand 2.0	315
Grammatik	50
Hunt for Red October	29
Letraset ColorStudio	1489
Letraset DesignStudio MS Excel 2.2	439 219
MS Word 4	199
Mac Link + PC	119
Mac Money	58
Mac Money Managing Your Money	123
Microphone II	215
MiniCad+ 2.0	517 379
Model Shop	379
OmniPage	545
PageMaker 4.0	intosh 69
Peter Norton Utilities Mac PixelPaint Professional	385
Quark XPress 3.0	call
Quicken	36
Retrospect	154
SAM	59
SmartCACHE	99
SimCity Supreme	47
StatView II	265 44
Suitcase II SUM II	95
Swivel 3D	289
Timbuktu	94
Timbuktu Remote	123
TOPS 3.0 TOPS DOS	188
TOPS DOS	165
TypeAlign	59
TypeStyler	118
Vellum White Knight	75 75
White Knight WingZ 1.1	249
WordPerfect	205
india, andar	200

#### HARDWARE

Accelerators	
Wide selection available Dove Marathon 030 Dove FastNet III/SE National Maccelerate Orchid Mac Sprint	Ca 42 37 43 21
Co-Processors	
68851 PMMU 68881 16 MHz 68881 25 MHz 68882 25 MHz 68882 33 MHz 68882 40 MHz	125 125 225 295 495 595
Digitizers	TO I
Audio Media Calcomp WIZ Calcomp WIZ Calcomp WIZ Pen Canon Zapshot Digital Vision B&W or Color Koala MacVision Farallon MacRecorder Kurta IS/ADB Tablet 12x12 Kurta Studio Orange Micro Personal Vision	ca 144 55 ca 215 155 375 1295
Summagraphics Bit Pad +	319

Summagraphics Bit Pad +	315
Emulation	
OrangeMicro Mac 286	999
OrangeMicro Mac 86	519
Soft PC	225
Fans	
Kensington System Saverse	51
Mobile Fanny Mac	57

Mobius Fanny Mac	57
Mobius SE Silencer	34
Mice/Keyboards	11.
A+ Optical Std or ADB	59/77
Abaton ProPoint	87
Adv. Gravis MouseStick	64
Apple Extended Keyboard	call
CE Mac 105 Keyboard	119
CH Rollermouse	109
Cutting Edge Mac105 Kbd	125
Datadesk Mac 101 Kbd	134
Datadesk Switch Board	174
Keytronics MacPro	119
Kraft QuickStick + or ADB	48
TurboMouse + or ADB	109

#### **HARDWARE**

Monitors.

E-Machines Z-21 SE30/II E-Machines T-16 Color E-Machines T-19 Color Magnavox Color 14* NEC MacSync 14* RasterOps 19* Trinitron Sigma ColorMax Sigma SilverView 21	2589 4269 499 552 2999 4168 1574
Network/Communicati Abaton Interfax 24/96 Asante Maccon II EtherNet DaynaTalk E-Mac SpeedLink E-Mac SpeedTalk Gator Box EtherNet Gator Card EtherNet II, SE/30 Hayes 2400/2400 int	412 419 119 359 99 2095

#### We have over 4,000 products for your Mac.

Kinetics EtherPort

Macirma II Magic 2400/2400Fax	799 85/99
MagicNet	17
Nuvotech Turbo Star Orchid MacFax	1299
Relysys T-Fax RA2110M	1199
Shiva NetModem 24/96 Shiva EtherGate	419/1355 1599
TOPS FlashCard	299
Printers	
Apple ImageWriter II	446
Apple LaserWriter II NTX	4299
HP DeskWriter	739
HP Paint lot/Plottere/Lacor II	call

#### WARE HARDWARE

QMS ColorScript

780 589 269 499	Qume ScripTen Seikosha Dot Matrix Printer TI Laser Printer Printer Interfaces	3195 210 2395
552 999 168 574	Freedom Of The Press GDT JetLink Express Orange Micro Grappler LX Scanners	259 87 125
412 419 119 359 99 095 449 390	Abaton 300S Abaton 300GS HP ScanJet LightningScan Logitech Scan Man Microtek MSF300GS Microtek MSF400GS Microtek MSF400GS Microtek 300Z wilnterface Sharp JX-100 Sharp JX-300 Sharp JX-450	1090 1350 call 369 319 1529 2819 1899 719 3185 5245

Inunderscan	1
Storage	
CMS SD30	4
Dayna Single 360k	5
Dayna Single 720k	5
Dayna Single 1.2mb	. 5
Dayna Single 1.44mb	6
Dayna Dual 360k/720k	6
Dayna Dual 360k/1.2mb	6
Dayna Dual 360k/1,44mb	8
Dayna Dual 1.2mb/1.44mb	823
Kennect Tech Rapport	2
Kennect Drive 2.4	
Toshiba CD ROM w/Interface	7
Upgrades	

opgrades	
Dove 524S	239
Dove 548S	479
800K &Rom Upgrade	call
Video Cards	
AAPS MicroTV Pro	379
Mass Micro ColorSpace III	1649
RasterOps 108+	1076
RasterOps 108+ SE/30	1279
RasterOps 264	539
RasterOps 264 SE/30	679
RasterOps 208 Mac II	350
RasterOps 364 Mac II	1099

#### HARDWARE

Disks, Ribbons, etc	
Polaroid DS	12
Polaroid DS/HD	24
MacDisk Bulk (50)	0.89
Sony Boxed	13.5
Sony Bulk	0.99
Black/Colored Ribbons	3/3.5
60/150 Meg Tapes	22/35
DeskJets	16

#### ORDERING

Orders ONLY: 1-800-622-3475 Info/Tech Supp:1-512-343-9441 Fax: 1-512-343-6141 Singapore: 65 250 3423 Hours: 7am - 10pm, M-F,

10am - 6pm S-S CST Tech Support Hours:

9am - 5pm, M-F CST

Minimum Order: \$40.00 Prices subject to change.



Payment: Visa, MasterCard, American Express, Optima (no surcharge), company & personal checks, COD, and Company & Institution PO's. Net 15. No AmEx on CPU's. \$5000 maximum on COD's.

Tax: Texas residents add 73/4%

Terms: Cards not charged until order ships. Returns subject to a restocking fee.

Shipping: \$4.50 - Emery, Airborne, UPS, US Mail. Leasing: Orders over \$2500 call.

8303 Mopac Expressway • Suite 218 • Austin, Texas 78759 • USA • 1-800-622-3475

1-800-MAC-DISK

## TEXAS MACEXPRESS

Ilci, 105mb Quantum internal, 5mb RAM, Apple 13" RGB Monitor, Mouse, Keytronix Extended Keyboard

#### **MAC IIcx**

Ilcx, 40 mb Internal, 8 bit color, 5 mb RAM, Extended Keyboard Mouse, 14" Color Monitor

\$4,949.

### MAC SE/30

SE/30, 105mb Quantum, Mouse, 5mb RAM, Extended Keyboard

\$3,899.

#### **MAC SE**

SE, FDHD Drive, 40mb internal. 2mb RAM, Mouse, Keyboard

\$2,369.

### **APPLE CPUs**

Macintosh Plus	\$1,249
Macintosh SE	\$1,740
Macintosh SE/30	\$2,795
Macintosh Ilcx	\$3,259
Macintosh Ilci	\$4,379
Macintosh Ilfx	NEW \$Call
Portable	\$4,359
Portable w/40hd	\$4,895

All Systems are new and Include Mouse, Manuals, and HyperCard for Free!

Call for more information!

## Meg SIM

Quality, 80ns SIMMs for any Macintosh, backed by a lifetime warranty.

### APPLE FDHD

Apple 1.44mb floppy internal replacement FDHD

## QUANTUM

#### 2 YEAR WARRANTY!

	Internal	External
40mb	\$365	\$489
80mb	\$599	\$715
105mb	\$649	\$765
120mb	\$799	\$925
170mb	\$925	\$1069
210mb	\$985	\$1099

For any Macintosh, the Quantum can't be beat in quality or price.

#### **IMPRIMIS WREN**

Externa Internal 300mb \$1759 \$1799 600mb \$2499 \$2549

#### **Novy QUICK-30**

UPGRADE your Plus, 512KE or SE

with the Novy Quick-030

SYSTEM 7.0 Compatible!
68030 MicroProcessor, PMMU, Co-Processor Option, and 4mb option available! Just like the SE/030!

Special Introductory Price. 16mhz Version \$699.00

#### **COLOR DISPLA**

RasterOps ColorBoard264 RasterOps ColorBoard208 \$359 NEC MacSync 14" Color Display\$489 Magnavox 14" Color Display

#### Take The Express™ 1-800-MAC-STUF CALL TOLL FREE 1-800-622-7883

Visa & MasterCard Accepted with no Surcharge.
CALL FOR TOLL FREE TECHNICAL SUPPORT 9AM-4PM CST
Call Monday thru Friday 9AM to 6PM (CST) To Order.
Texas MacExpress • 9430 Research Blvd., Bldg. II, Ste. 250
Austin, Texas 78759 • (512) 343-0015 • FAX (512) 345-5059 1990 CC Corp, All Rights Reserved. Texas MacExpress is a TM of CC Corp.

Circle 442 on reader service card.

## **PINPOINT** PROSPECTS.

Advertisers

interested in

renting

MACWORLD's

Subscriber List,

Please call

Kevin Normandeau

IDG List Services

1.800.343.6474

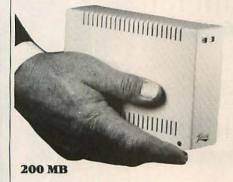
for MA 508.879.0700



# **Portable Hard Drives**

- Compact, measures only 2" x 5" x 7"
- Lightweight, under 3lbs.
- Durable 60 G shock rating

- 110-220 volt power supply option inside drive case
- Quiet connection cooled
- Fast, 12ms access,



40 Quantum'	59900
80 Quantum	84900
100 Conner	89900
105 Quantum	99900
200 Maxtor	159900
International Power	5000
Carrying Case	2900
'Add 10000 for Internal Power Supply	



The Affordable Portable
120 Saratoga Ave., Ste. 82, Santa Clara, CA 95051

Call us today for your free 30-day trial.

(408) 983-1127

Circle 224 on reader service card

# Protect Our Natural Resources.

The future of America has always been its children. But drug and alcohol abuse, teenage pregnancy and lack of education are threatening that future. The Boys & Girls Club addresses these problems, providing boys and girls with a positive environment in which to learn and grow. Help protect our greatest resource. Make a contribution today, so they can make one tomorrow.

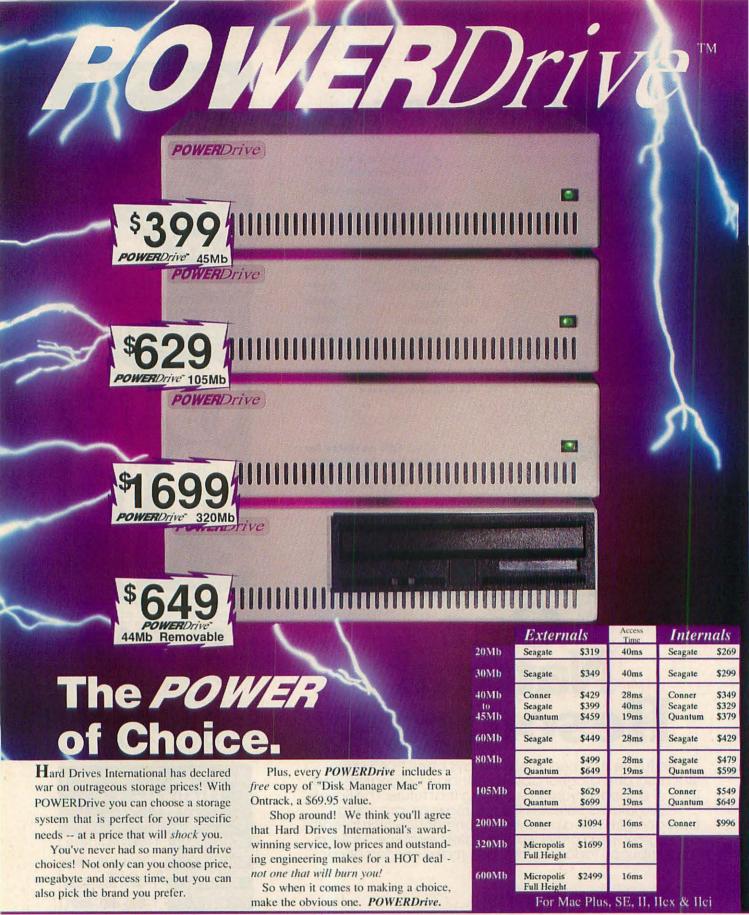


The Club that beats the streets.





Circle 79 on reader service card.



HARD DRIVES
International



1912 W. Fourth Street Tempe, AZ. 85281 Local Sales: (602) 967-5128 FAX: (602) 829-9193 Int'l FAX: (602) 921-8312

#### In U.S. & Canada 🍁 (800)-733-DISK

Corporate Sales: (800) 733-0882 APO/FPO Hotline: (602) 350-1145 International orders: (602) 350-1144 Order Status: (800) 776-3472











Hard Drives

#### Never a Surcharge for Visa & MasterCard!

FOR VISIA & MASIET CITY
Price and sexualizely subject to change. All items are new. 5% surcharge for American Express and COD redons. P.O's society or programmer of the programmer conditions. Shipping A handing changes not rethnicable, product must be in original condition. Add \$11 shipping for Millary APO/FPD Express delivery. Hard Drives International is a division of insight Distribution. Network, inc. All trademarks, and trade names are the properties of bisir respective Owner.

All products come with a 30 Day "Worry-Free" Guarantee and Replacement Policy

#### Never buv another ribbon with

# MacInker

Each MacInker shipped complete with free ink bottle, reservoir cover and ink dispenser



MacInker™, the original, automatic ribbon reinker. Model 234IM re-Imagewriter I/II black & single color car-tridges. The Universal MacInker re-inks hun-dreds of cartridge types (including the Imagewriter LQ, one color and multicolor) with suitable

S42.00 shipping \$5.00 sold Free catalog printhead life. New reservoir for precise ink metering. Average number of re-inkings/cartridge is 60-100. With the optional Multicolor Adapter (mod M422, \$40.00) your MacInker re-inks 4-color Imagewriter II cartridges. Full range of accessories available, inks & cartridges, heat transfer, etc. Colors: red, green blue yellow purple brown orange silver gold white green, blue, vellow, purple, brown, orange, silver, gold, white

Imagewriter I/II MacInker (mod 234II	VI)45.00
Universal MacInker (includes one ad	
Multicolor Adapter (mod M422)	40.00
Heat Transfer Adapter25.00	HT cartridge9.00
Imagewr. cartr. black3.15/ea	4-color10.00/ea
Imagewr. LQ cartr. black14.00	4-color20.00
Extra ink bottle black3.00/ea	pint black18.50
THE RESIDENCE OF THE PROPERTY AND PERSONS ASSESSMENT OF THE PERSONS AS	AND DESCRIPTION OF THE PARTY OF

#### Data Switches, manual or automatic

	1000	CHINESE IN
40	1 (B)	<b>NEW HIST PRO NOT</b>
\$500	HM-401	

4 port 8 pin manual	50.00
4 port automatic	
4 port 9 pin manual	50.00
cables	16.00

Special Offer. Order for >60.00 and say: "I saw it in MacWorld" and get a free mousepad. Order for >\$100.00 and get a free key chain, beeper and flashlight combined (a \$15.00 value)or get an accurate electronic pedometer, jog and step meter with included calculator for \$12.00 (a \$4.00 value).

# ightFax 9624

9600 b fax, 2400 b modem

High Speed Fax and 2400 baud modem in one compact unit. 9600 baud fax (fully Group 3 compatible) for fast transmission and lower telephone bills. Fax directly from your application. Cable/software included. Powerful software includes. File Queuing, Scheduled Sending, Broadcasting, NameCard



Shipping \$7.00

\$399.00

#### LightSpeed 9624E -9600 b Modem

V.32 - MNP class 5



• 9600/4800/2400/1200 bps full duplex data transfer

• V.32/V.22bis/V22, Bell 212A compli-

ant, fully Hayes compatible MNP class 5 error correction and

data compression

No proprietary protocols. Effective throughput up to 19.2bps
Auto speed detection

Shipping \$7.00 • Cable and software included

#### Order Toll Free 800-547-3303

In Oregon (503)626-2291

Computer Friends, Inc., 14250 NW Science Park Dr. Portland OR 97229 fax (503)643-5379 - telex 4949559 CF - AppleLink DO 438

Circle 61 on reader service card.

# Macintosh Color Systems

Macintosh SE/30 2 MB RAM 40 MB Quantum 24-Bit Color Card Apple Color Monitor Extended Keyboard

\$4,999.00

Macintosh IIcx 8 MB RAM 80 MB Quantum 24-Bit Color Card Apple Color Monitor Extended Keyboard

\$5,999.00

Macintosh IIci 16 MB RAM Cache Card 170 MB Quantum 24-Bit Color Card 19" Trinitron Monitor Extended Keyboard

\$12,999.00

Animation, color pre-press, or multi-media, our experienced sales consultants will help you configure a system that's both functional and affordable.

The absolute lowest prices, toll free technical support, no credit card surcharge, and no sales tax (outside Texas) - Call us today for the best deal on color systems!

VISA



512/448-1911 FAX 512/448-0825

Prices subject to change (usually down). Although we are not an authorized Apple dealer, we will repair or replace any Apple equipment during the warranty. All merchandise is guaranteed new, unused, and owered by original manufacturer's warranty. Apple 'Macintosh', 'Quantum', and 'Trinitron' are trademarks of their respective companies.

6800 Westgate Blvd., Suite 139 Dept. 325, Austin, TX 78745

Circle 509 on reader service card.

# MacLand

America's Largest Macintosh Hardware Source

Prices good through June 1990

# **Qume's ScripTEN**

PostScript Laser Printer
Presenting Another Unbelievable Value from MacLand

- Ten pages per minute
- 11 Font Families (35 typefaces)
- 3 megabytes of RAM
- Solid Blacks for graphics and subtle, wellformed characters for text
- Letter, Legal, Envelopes, and transparencies



Retail Price \$4,595

*Sale Price* \$2,595



Visa, MasterCard, and American Express accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional \$5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.

# The Reasons You Should Buy From MacLand...

Price—
Because of our multi-million dollar buying power, we purchase large volumes of quality hardware at low prices and pass the savings on to

our customers.

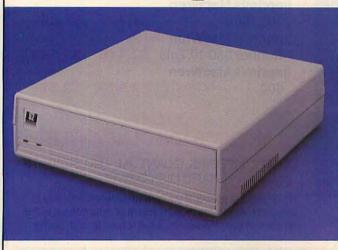
We offer Same Day
Shipping on all in stock items if we receive your order by 3 pm Mountain Standard Time. ALL credit card orders are shipped by FEDERAL EXPRESS STANDARD AIR service which means you get your merchandise fast!



Inspected & Tested by MacLand Technician Technical Support— MacLand has the best

technical support, period. We provide you with technical support BEFORE AND AFTER your purchase. Best of all, to assure you the high est quality, our trained technicians test ALL hard disk drives for quality and viruses before we ship them to you.





Free Back-Up Software With Every Hard Disk Drive A \$199 Value

### **Hard Disk Drives**

	Internal	External
Seagate 20 32ms	\$299	\$349
Seagate 31 32ms	\$349	\$399
Seagate 46 32ms	\$399	\$449
Seagate 62 28ms	\$449	\$549
Seagate 81 28ms	\$499	\$579

#### 30 DAY MONEY BACK GUARANTEE

ON ALL IMPRIMIS, QUANTUM, AND SEAGATE HARD DISK DRIVES

No questions asked. If you are unsatisfied with any of these drives for any reason you may return them within 30 days of your invoice for a full refund less shipping.

# Quantum



Free Back-Up Software With Every Hard Disk Drive
A \$199 Value

#### **Hard Disk Drives**

	Internal	External
Quantum 40 19ms	\$399	\$499
Quantum 80 19ms	\$649	\$749
Quantum 105 19ms	\$699	\$799
Quantum 120 15ms	\$899	\$999
Quantum 170 15ms	\$999	\$1,099
Quantum 210 15ms	\$1,199	\$1,299

#### 30 DAY MONEY BACK GUARANTEE

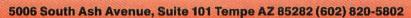
ON ALL IMPRIMIS, QUANTUM, AND SEAGATE HARD DISK DRIVES

No questions asked. If you are unsatisfied with any of these drives for any reason you may return them within 30 days of your invoice for a full refund less shipping.

For Ordering <u>and</u> Technical Support Call 1-800-333-3353 (FAX #602-345-2217)









# MacLand

# **IMPRIMIS**



Free Back-Up Software With Every Hard Disk Drive
A \$199 Value

#### **Hard Disk Drives**

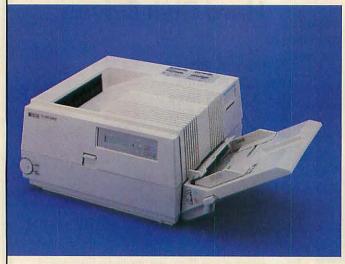
	Internal	External
Imprimis MacWren		
170 16ms	\$1,399	\$1,499
Imprimis MacWren		
300 16ms	\$1,799	\$1,849
Imprimis MacWren		
Runner 330 10.7ms	\$2,149	\$2,199
Imprimis MacWren		
600	\$2,549	\$2,599

#### 30 DAY MONEY BACK GUARANTEE

ON ALL IMPRIMIS, QUANTUM, AND SEAGATE HARD DISK DRIVES

No questions asked. If you are unsatisfied with any of these drives for any reason you may return them within 30 days of your invoice for a full refund less shipping.

# RIGOH



### Ricoh Laser 6000/PS Postscript Laser Printer

- Adobe Postscript Version 50.5
- 35 Resident Fonts
- Letter, Legal, Envelopes, and European
- One Year Warranty with first 90 days on site
- Incredible Blacks and Clear Fine Lines
- Two Megabytes of RAM Expandable to Four Megabytes
- Optional Two Bin Automatic Paper Tray Available

Retail Price \$3,499

**\$2,595** 

Visa, MasterCard, and American Express accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional \$5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express

Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.

## The Lowest Prices with Technical Support, Too!

# Qume.



#### CrystalPrint Publisher

Brings high performance laser printing to the PostScript environment without the high price!

- Five times faster than the LaserWriter IInt
- 11 Font Families (35 typefaces)
- 3 megabytes of RAM
- Solid Blacks for graphics and subtle, well-formed characters for text
- Letter, Legal, Envelopes, and transparencies

Retail Price \$4,499 **Sale Price** \$2,495

#### **Removable Hard Drives**

CMS Enhancements 44 25ms SyQuest 44 25ms

\$799 \$699

#### Removable Cartridges

SyQuest 44 Cartridges \$89 (Will fit any 44 Removable Hard Drive)

#### Tape Backups

CMS 60 Meg CMS 150 Meg Cache 150 Meg \$649 \$849 \$780



current prices. Remember, if you bought your memory from someone else, you probably paid too much!

#### **Printers**

Kodak Diconix Portable Printer	\$514
Ricoh Ricoh PostScript Laser Printer	\$2,595
Qume Crystal Print Publisher	\$2,495

#### Scanners

ScripTEN Postscript Laser Printer . . . . . \$2,595

Abaton 300/S W/Interface	\$1,299
Abaton 300/GS W/Interface	\$1,475
Microtek MS II Sheet Feed	\$1,049
Microtek MSF 300GS	\$1,479
Microtek MSF 300Z - Color W/Interface	\$1,975

#### **Modems/Fax Modems**

Abaton Fax Modem 4800 Baud	\$259
Abaton Fax Modem 9600 Baud	\$399
Telebit T-1000 9600 Baud	\$679
Telebit T-2500 19 200 Baud	\$1,229

#### **Accelerator Boards**

dius		
**	 	

#### Monitors

NEC MacSync 14" Color Monitor	\$519
Qume	
Qume 14" Color Monitor	\$499
Qume Portrait Monitor SE, II, Ilcx, Ilci	\$799

#### 

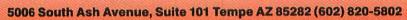
# RasterOps \$1,299 RasterOps 19" ClearVue SE \$1,399 RasterOps 19" ClearVue/GS Gray Scale \$1,599 RasterOps 16" 108 + Color System \$2,949 RasterOps 19" 108 + Color System \$3,699 RasterOps 16" 108 + SE30 Color System \$2,999 RasterOps 16" 108 + SE30 Color System \$3,799 RasterOps 16" 224 Color System \$4,849 RasterOps 19" 224 Color System \$5,999 RasterOps 208 Color Board, II \$399 RasterOps 264 Color Board, II \$399 RasterOps 264 Color Board, II \$399

Samsung 15" Full Page Monitor and Card		\$59
Sony 1304 Color Monitor		\$73

For Ordering <u>and</u> Technical Support Call 1-800-333-3353 (FAX #602-345-2217)











# TAKES

# THE LOWEST PRICES!

# SAME DAY SHIPPING TILL 9:00 PM EST

#### SOFTWARE

The terms of the second	
A LASTING IMPRESSION	100
RésumExpert	37
AATRIX	72.02
Payroll Plus Checkwriter II	150
Checkwriter II	35
Timecard	115
ACIUS	109
4th Dimension	450
ADOBE SYSTEMS	409
Adobe Illustrator '88 (incl. A	TM) 275
Adobe Type Manager Adobe TypeSet 1 or 2 StreamLine	55
Adobe TypeSet 1 or 2	55
StreamLine	225
ruerorm	725
Photoshop	525
Photoshop Fonts AEC MANAGEMENT SYSTE	Please Call
AEC MANAGEMENT SYSTE	M
AEC Info Manager	409
FastTrack Schedule	113
ALDUS	070
PagemakerFreehand 2.0	3/9
Persuasion	310
ALFAGRAPHICS	
Template Software for Qua	rkYnroce
PageMaker, Style, Ready Claris Smart Forms	Set Go 25
Claris Smart Forms	29
ALSOFT	
DiskExpress II	54
Master Juggler	54
ASD SOFTWARE	
Fileguard Fileguard Extended Ed	88
Fileguard Extended Ed	138
BLYTH SOFTWARE	
Omnis 5	355
BRODERBUND	44.00
TypeStyler	117
Drawing Table	12
OmniPage	504
OmniSpell	72
OmniDatt	72
OmniDaft	
Quickmail 10 User	298
QuicKeys In/Out 5 User	64
In/Out 5 User	126
DiskTop 4.0	64
DiskTop 4.0	
Casino Master Casino Master Color	38
Casino Master Color	45
CHANG LABS	
Rags to Riches 3-Pack	188
COMPUTER ASSOCIATES	400
Bedfords Simply Accounting Cricket Graph	g199
Cricket Paint	124



DATA VIZ	
MacLink Plus PC	121
DENEBA	
Canvas	185
UltraPaint	
DIGITALK	
Smalltalk/V Mac	119
DREAMMAKER SOFTWARE	113
Cliptures Vol 1 or 2	69
MacGallery	26
MacGallery	
Studio 8	289
Studio 1	92
Disk Tools Plus	30
Thunder II	52
Thunder II	
SmartArt 1,2,3 or 4	79
Type Align	59
Type Align	
FastBack II	108
DiskLock	112
Suitcase	44
FOX SOFTWARE	A SHADING S
FoxBASE +/ Mac 2.0	289
FoxBASE +/Mac Multiuser	
FREESOFT	West Control
White Knight	81
GRAPHSOFT	
Minicad+ 2.0	499
BluePrint	343
GENERIC	
1st CAD Level 1	83
HELP SOFTWARE	
Help for Excel 1.5 and 2.2	55
H.IC SOFTWARE	
Virex	51
	ADSATS AND A
-1111111	



- Little and the second and the seco	the state of the s
	Charles and
HYPERGLOT	
Kanjimaster	89
Word TortureSpanish, Russian	
French, Italian & German Verb Tutor for above languages	29
Verb Tutor for above languages	39
Tense Tutor for above language	s39
	220
WingZ. INSIGHT DEVELOPMENT	200
MacPrint	77
INSIGNIA	
Soft PC	242
KIWI SOFTWARE	
Kiwi Envelope	35
LANGUAGE SYSTEMS	
Fortran with MPW	398
Wild ThingsLAYERED SOFTWARE	119
AtOnce	070
Insight Expert per module	200
MACROMIND	399
Macromind Director	439
Accelerator	125

The state of the s	
MAGIC SOFTWARE	
AutoSave II	24
BackMatic	48
POWERicons	38
MATHSOFT	
Mathcad Mac	335
MICROSOFT	000
Word 4.0	243
Fyrel	247
Excel	25
Power Point	247
MICROSPOT	
MacInteriors	170
MONOGRAM	113
Dollars & Sense	70
Dollars & Serise	19

# UIIIIII.



WHITE KNIGHT. \$81
Freesoft's White Knight is the successor to
Red Pyder. Added new features list is 20 pages
long and includes a reworked user interface,
enhanced terminal support, supports 12 transfer
protocols and works with MultiFinder.

NEW HORIZONS	
Wordmaker	63
ODESTA CORPORATION	
Double Helix Version	335
GeoQuery	189
GeoQuery Data Desk Professional	270
PARACOMP	213
Swivel 3D	000
Swiver 3D	289
Model Shop	369
PARAGON	2000
PORTFOLIO SYSTEMS	238
PORTFOLIO SYSTEMS	
Dynodex	79
POWER UP	
Address Book Plus	
Address Book Plus	51
Address Book Plus with Binder	/5
Calendar Creator	35
Fast Forms	86
PRO PLUS	
Wall Street Investor	395
QUARK	
XPress	455
Style	166
REFERENCE SOFTWARE	
Gramatik Man	EO
Gramatik MacSATORI SOFTWARE	50
SAIDHISOFIWARE	100
Bulk Mailer	//
Project Billing	318
SENSIBLE SOFTWARE	
Sensible Grammar	52
Book Ends	52
SILICON BEACH SOFTWARE	
Super Paint 2.0	123
Digital Darkroom	244
Supercard	123
SOLUTIONS INTERNATIONAL	
Smartscrap	AG
SuperGlue II	40
The Cureter	59
SOFTWARE VENTURES	09
Microphone II	000
Microphone II	209
SPRINGBOARD	-
Publisher II	86
Hidden Agenda	34
Sargon IV	22

# ......



NISUS.....\$239
Paragon's Nisus is a powerful word processing program that's easy to use. It allows you to draw, make it transparent, flow text and wrap around it, searches unopened files and more.

# STUDIOTRONICS Colorset. SUPERMAC Pixel Paint Professional Superspool. Superlaser Spool..... SYMANTEC Think C 4.0... LightSpeed P SAM SUM II... More III... SYMMETRY .159 ...94 ...63 .104 .256 SYMMETRY Acta Advantage KeyPlan SYNERGY Kaleidagraph VersaTerm-F



Teleconnectors

BULKMAILER \$77
Satori Software's BukMailer is designed for managing mail lists including duplication elimination, zip and alpha sorts. Other features include mail merge with Microsoft Word and envelopes printing. Ideal for groups or individuals.



Fax Your Corporate, Educational & International Orders Now! 30 Day Approved Credit

# CARE OF VOIJ 1-800-825

FAX 1-818-501-3760

# AFTER SALES SUPPORT!

# MONEY BACK GUARANTEE!

#### **HARDWARE**

APPLE — CALL! LEASING AVAILABLE!
AAPS CORPORATION Micro TV267
ADATON
Interfax Fax-modem 12/48 262
Interfax Fax-modem 24/96399
Quick Step Printer2798
Interfax Fax-modem 12/48.
ALTRA Felix the Mouse117
AOX
DoubleTime-16199
BEST DATA
Smart One 2400143
CUTTING EDGE 20 Meg Hard Drive348
30 Meg Hard Drive 428
45 Meg Hard Drive478
45 Meg Removable759
20 Meg Hard Drive
DATADESK
Mac - 101 Keyboard133
FMACHINEC
Big Picture Z21for SE1775
Big Picture 221for Mac II
Big Picture Z21for SE
MacRecorder 162 PhoneNET PLUS (10 Pack) 219 PhoneNET Star Controller 815
PhoneNET PLUS
PhoneNET PLUS (10 Pack)219 PhoneNET Star Controller 815
Timbuktu 93
Timbuktu
HAYES
Smartcom II
2400 with Smartcom II 398
HEWLETT PACKARD
Desk Writer
Paint Jet
Paint Jet XL1995
Laser JetCall
ICD
Graflex83
Pro series 20 Meg 379
Pro series 20 Meg
Pro series 80 Meg
IOMEGA Benoulli II Single 44 Meg1378
Benoulli II Dual 44 Meg2078



KENNECT TECHNOLOGY	
Rapport	197
Drive 2.4	325
KENSINGTON	9900
Turbo Mouse	107
System Saver Mac II Stand & Cables	64
Masterpiece Mac II	101
KEYTRONICS	
Keyboard, inc. Tempo II	118
KINETICS	
Ether Port II	517
Fast Path 4	
KODAK	
Diconix M150 Portable Printer	535
MEGA GRAPHICS	
19" Rival Mono Plus, SE, SE/30, I	1.1145
19" 256 Greyscale 19" Sony Color II, Ilcx	2298
19" Sony Color II, IIcx	3999
MICROTEK	1475
Flatbed MSF-300GS Color Scanner MSF-300Z	1900
MICROTECH	.1030
Nova 40	CALL
Nova 80	CALL
Removable Hard Drive	CALL
MICROTOUCH	
UnMouse	179
NEC	
MacSync	499
Intersect External CD Rom	699
Clip Art 3D for CD Rom	2000
ColorMate PS	.0999



GRAFLEX	
ICD's Graflex is a new printer in Mac and is designed to work with the	
a printer cable. Graflex is easy to i	nstall and can
Transministration of the Parket of the Parke	

NEWGEN

	Turbo PS 360	
	Turbo PS 400	3999
	Turbo PS 480 Upgrades available	.5549
	Ungrades available	CALL
	NEMONIX	-
	NEMUNIA	040
	68020 16Mhz SE Accelerator	349
	ORCHID TECHNOLOGY	
	MacSprint II	209
	MacFax/Modem 9600 Baud	435
		400
	PLI (PERIPHERAL LAND)	1 90000
	Infinity 40 Removable Hard Drive .	969
	TurboFloppy 1.4	329
	TurboFloppy 1.4 Optical Drive 635 Mb	.3795
	POLOROID	No din
	Data Recovery Disks	15
	Data necovery Disks	10
	PRACTICAL SOLUTIONS	/1000
	Cordless Mouse	92
	PRACTICAL PERIPHERALS	
	2400 External Modem	177
	Mac Comm. Pac 2400	219
	DDOMETHELIC	
	PROMETHEUS	
ľ	2400 Mini Modem + MacKnowledg	je 139
Ē	Promodem 2400M Fax + software	
F	Promodem 2400M + software	188

QUME	
Crystal Print Publisher ScripTen	2845
RADIUS	
15" Full Page Monitor	969
RASTEROPS	1069
ColorBoard 264 for II or SE/30	CALL
ClearView/SE System 19" ClearView/II System 19"	CALL
ProColor 708+ System 19" ProColor 724 System 19"	CALL



	THE OWNER OF THE OWNER OWNER OF THE OWNER OWNE
SHARP	5405
JX-450 Color Scanner JX-300 Color Scanner	3898
Color Printers	Call
1 Meg.Simms 100, 80,70 ns	Call
EtherGateNetmodem v2400	1689
SUPRA	
2400 Baud External Modem SYSTEMGATE	
Floppy Drive 800K THE COMPLETE SCANNERS	145
Half-Page Scanner/400 Complete Page Scanner	310
THUNDERWARE	
ThunderScan 5.0 Lightning Scan	
TOSHIBA CD Rom	875
TOTAL SYSTEMS	
Gemini 020/030 16MHz 020 Gemini 020/030 16MHz 020 + 88	1 866
Gemini 020/030 20MHz 030 Gemini 020/030 25MHz 030	1179
Gemini 020/030 for MacPlus Adaptor for MegaGraphics Monito	rs 149







SENSIBLE GRAMMAR, BOOKENDS........\$52
SENSIBLE SOFTWARE'S Sensible Grammar is a last and reliable electronic proofreader and checks your writing and grammar. Bookends is a database for keeping track of articles in magazines and books and makes data entry easy.

#### POLICIES

- Visa, Mastercard and AMEX accepted.
- Credit card is not charged until order is
- California residents add 6.75% sales tax Hours: Mon Fri, 10-11 EST.
- Sat Noon 5 EST. Call (818) 501-6581. FAX (818) 501-3760. All prices & policies subject to change

- Shipping
   \$3. UPS Standard Air/Blue. Hardware over 10 lbs will be shipped ground.
- Same day shipping on orders placed by 9:00 pm EST, if items are on hand.

 Defective software will be replaced immediately by the same item. Call (818) 501-0861 for R.A. number before return

#### Money Back Guarantee

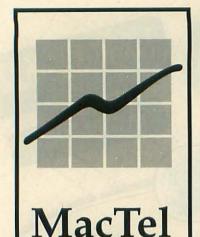
· Most products have a 30-day money back guarantee. Please inquire when you order.



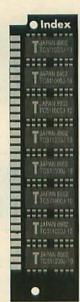




SIMMS 70 nanoseconds......\$82 MAC HCX 4 meg RAM 80 meg Quantum internal...\$4499



Technology Corp.



#### "INDEX" MEMORY MODULES

#### 1Mb Surface Mount, Low Profile

- 80ns / 70ns SIMMs
- Gold Contacts and Traces

Lifetime Warranty

DIP SIMMs available on request

CALICALICALICALICALICALI

Macintosh FX & LaserWriter II SIMMs		\$22
256K SIMMs		\$22
4Mb Surface Mount/Low Profile (80ns)		\$485
INDEX Macintosh Portable RAM 1Mb (Sta	tic RAM)	\$375
INDEX Macintosh Portable RAM	4Mb	CALL
	8Mb	CALL

"Prices subject to change without notice and All products subject to availability"

MacTel Technology Corp. carries only quality product for the Mac CALL OR FAX for CATALOG

#### INDEX" HARDDRIVES R R

Quantu	ım 3.5	" ProDrive HD -	12ms
		Internal	External
40Mb	12ms	\$359	\$479
80Mb	12ms	\$569	\$699
105Mb	12ms	\$615	\$775
170Mb	12ms	\$969	\$1095

Hitachi 3.5" PowerCapacity - 17ms

200Mb	17ms	\$999	\$1125
250Mb	17ms	\$1235	\$1375

**Imprimis** 5.25" Wren Series HD - 15ms

180Mb	15ms	\$1099*	\$1199
300Mb	15ms	\$1575*	\$1675
600Mb	15ms	\$2099*	\$2250
4 Y		A	A 4

1.2GigaByte \$4525\* \$4725 **SYOUEST** Cartridges \$74

> MacTel 45R w/Cart. ... CALL All Software, Handbook & Cables

included to PLUG & GO"



NO SURCHARGE for Visa & MasterCard and 4% for AM.Ex. and your credit card will not be charged until order is ready to ship. International orders call or fax for details, European banking

ship. International orders call or fax for details, European banking services available

• POs accepted from University, Goverment, Military NET 30 and Corporate (on approval), NET 30.

• Please allow 10 days for personal and company checks to clear.

• Retuned product must be authorized to expedite process, call (512/451-2600) for R.M.A. number.

• All defects will be replaced or repaired at MacTel discretion.

• Shipping & handling charges not refundable: product MUST be in original condition and shipping container.

• Prices subject to change without notice and availability.

#### DayStar Digital FastCache CI

#### Hewlett Packard

DeskWriter

#### Hayes

V-9600 Modem

#### Howtek Inc.

ScanMaster w/GPIB Interface & Scan-It Software ScanMaster II w/GPIB Interface & Scan-It Software **Transperency Option** 

#### LaCie "TSUNAMI" HardDrive (CALL)

#### Macintosh CPU's

- MacII CX, CI, & "NEW" MacII FX
  MacII FX LogicBoard Upgrades & More..
  always available call for lowest price anywhere!

#### MacTel HardWare

MacTel-NET (100% Phone-NET® Plus compatible)>\$18 Syquest 45Mb Cartridges (SQ400)>>>>>>\$74.00

\* FITS ALL REMOVEABLE DRVIES\* Sony Optical Cartridges 512K or 1024K Sony 600Mb Removable Optical SCSI Drive

#### Nikon Inc

Nikon LS-3500 Film Scanner

(including: ColorFlex Software, GPIB Interface w/cables)

#### Peripheral Land

Infinity 40-Turbo w/case Infinity 650Mb Optical w/case

#### Radius • NEW PIVOT MONITOR

#### RasterOps

ColorBoard 208 ColorBoard 208 V-RAM Upgrade ColorBoard 264

Video ColorBoard 364

ColorBoard 708+ 19" System Complete RasterOps Product line

Sharp JX-730 Color Ink Jet Printer X-3500 Sharp Laser Printer JX-300 Business Color Scanner

Call or Fax for a custom System Bid "World-Wide"

3007 N. Lamar Austin TX 78705 Tel: (512) 451-2600 Fax: (512) 451-3323 Tech Support: (512) 458-2222 MacNet: MACTEL Australia: 800 K.: 0800 89-1428 Europe: (0041) 46-054020

# THE MAC-EXPRESS ADVANTAGE

FREE SHIPPING on all products\*
GUARANTEED LOWEST PRICES

-GUARANTEED LOWEST PRICES on all in-stock items
-QUALIFIED personnel will help you find the right products
-We welcome EDUCATIONAL,
CORPORATE and AEROSPACE purchase orders
-We carry many more products than are listed here, give us a call

ACCESSORIES	
BLACK RIBBON, IWII	3
CURTIS CLIP	4
DUST COVERS	ALL
FLOPPY DISK WALLET	10
MAC TO HAYES MODEM CABLE	12
MAC TO HP LASERJET CABLE	10
MAC TO IMAGEWRITER II CABLE	10
MAC TO LASERWRITER CABLE	11
MAC TO MULTISYNC CABLE	17
MAC TO SONY CABLE	15
MOUSE PAD	9
MULTICOLOR RIBBON - IWII	9
NEC LC-890 TONER	19



PHONENET DB-9	35
PHONENET DIN-8	35
PLP TONER	29
QUICKNET DB-9	22
QUICKNET DIN-8	22
SCSI CABLES	
SONY DD 10 PACK	
SONY HD 10 PACK	
SURGE MASTER 6-OUTLET	
SYSTEM SAVER - PLUS	
SYSTEM SAVER - SE	
TURBO MOUSE	
TURBO MOUSE - PLUS	105

DRIVES
CMS External 20MB 425.
CMS External 30MB 475.
CMS Removable 45MB799.
Quantum 40MBCALL
Quantum 105MBCALL
Cutting Edge 20MB CALL
Cutting Edge 30MB 450
Cutting Edge 45 Remov 769
(All Drives come with cables
and software)

HARD

#### BUSINESS/

THODOCTIVITI	
4TH DIMENSION	499
ACTA ADVANTAGE	65
AT ONCE	275
BIG THESAURUS	59
BULK MAILER	79
COACH THESAURUS	31
EXCEL	249
FILE	121
FOR THE RECORD	26
FULL IMPACT	239
FULL WRITE	239
GRAMMATIK MAC	59

HYPER TUTOR	24
INBOX	
INBOX STARTER KIT	149
INSIGHT ACCT, MODULES	CALL
KEYPLAN	
LANGUAGE MASTER	59
MAC FLOW	
MAC SCHEDULE	
MACPROOF	
MICRO PLANNER	305
MICROPHONE II	219
MORE II	
NAVIGATOR	
OMNIDRAFT	
OMNIPROOF	
OMNITRACE	
ON LOCATION	CALL
PERSONAL ACCOUNTANT	20
POWERPOINT	
QUICK DEX	
QUICKEN	
QUICKMAIL - 10 USER	
QUICKMAIL - 5 USER	150
READ IT!	
REFLEX PLUS	
SENSIBLE GRAMMAR	
SIMPLY ACCOUNTING	
SMARTCOMM II	
SOFTPC	
SOFTPC EGA/AT OPTION PACK	CALL
SPELLING COACH	
STATVIEW II	260
STATVIEW SE+GRAPHICS	215
SUPER EXPERT	
TIMBUKTU	90
TIMBUKTU 30 PACK	1275
TIMESLIPS III	150
TOPS	
TOPS FLASHBOX	
TRUEFORM	
VERSATERM PRO	
WILL MAKER	
WINGZ	
WORD	
WORDFINDER	
WORDPERFECT	189
WORKS	
WRITE	
WRITENOW	

#### EDUCATIONAL

EDUCATIONAL	
EARLY GAMES	27
FIRST LETTERS & WORDS	30
FIRST SHAPES	30
MASTERTYPE	30
MATH BLASTER	27
MATH BLASTER MYSTERY	27
MATH TALK	30
MATH TALK FRACTIONS	30
MAVIS BEACON TYPING	29
SPEED READER II	27
TALKING MATH RABBIT	34
TALKING READER RABBIT	34
TYPE!	
TYPING TUTOR IV	31

#### **ENTERTAINMENT**

410 a Inches	- 41
AIRBORNE!	. 25
BALANCE OF POWER:1990	. 34
BARD'S TALE	. 29
BEYOND DARK CASTLE	. 35
CARMEN SANDIEGO EUROPE	. 29
CARMEN SANDIEGO USA	. 29
CARMEN SANDIEGO WORLD	. 28
CHESSMASTER 2100	. 35
CITADEL	. 29
COLONY	. 34
CRYSTAL QUEST/CRITTER EDITOR	
DARK CASTLE	.20
DEFENDER OF THE CROWN	
FALCON 2	. 35
FAST BREAK	
FLIGHT SIMULATOR	. 35
HUNT FOR RED OCTOBER	. 25
KING'S QUEST	29

CREDIT CARD CARDS ACCEPTED. We accept Visa. Made-Card, American Excress and Discover, his suchiarge on Visa on Missin-Card. 1% suchiarge on Discover, 4% suchiarge on American Excress WE 00KT CARDARO YOUR CARD UNITE. THE PRODUCT SHIPS!

CO.D. GRDERS: And 350. Cash, Money Order and Cashiers Chacks are excepted, no company or personal chacks, please. Spraping methods in PSI Ground. No. O.D. on Male CPUs.

Shipping: Shipping and insurance within the contraintal United States by UPS Ground are FREE. Card or the rhapping prainfolds are raised. Calibrain selection forly good CFS by trained true. International, JAPAN and PT Cardaro States and States

mait be in original condition and pickaging 200 be sent outs when the sign of contents, chasts.

CONDITIONS Prices are subject to change inflored All ands subject to available, We reserve to pild to have to set to anyier to when the original product performance.

RIERNAMONAL TOLL-PREC ORDERING POLICIES Minimum order \$100 US Over \$500 must be shough feeters between the places. Orders origing pleases. About they no product operations of any thorong inquies will be liver order the Life free phone lines. For any other information, please cell \$213 \$70,500. Shopping peace way and are quoted followingly your cross-Payment is made was credit out at electronic band transfer. For any other information, please cell round product to the transfer. The any other information, please cell round product to the state of the please of the please of the state of the please of the state of the state of the please of the state of the please of the state of t

Apple and Macintash are registered transmitted MINIMUM ORDER IS \$20

KING'S QUEST II	2
KING'S QUEST III	2
LEISURE SUIT LARRY	2
LIFE & DEATH	2
MAC GOLF	3
MAC GOLF CLASSIC	5
MANHOLE	3
MIGHT & MAGIC	3
NFL CHALLENGE	5
PIPE DREAM	2
QUARTERSTAFF	2
SHADOWGATE	
SHANGHAI	1
SHUFFLEPUCK CAFE	
SIMCITY	
SIMCITY FOR MAC II	
TETRIS	2
TETRIS - MAC II	
WAYNE GRETSKY HOCKEY	
YEAGER'S FLIGHT SIMULATOR	2

#### HARDWARE

1 MEG SIMMS	
300MB EXTERNAL HD	230
600MB EXTERNAL HD	350
800K EXTERNAL DRIVE	12
A+ MOUSE	CAL
APPLE 8-BIT VIDEO CARD	52
APPLE EXTENDED KB	18
APPLE IMAGEWRITER II	4
APPLE LASERWRITER NT	
APPLE LASERWRITER NTX	
APPLE LASERWRITER SC	
APPLE RGB HI-RES MONITOR	



MACHX	CALL
MAC PLUS	CALL
MAC PORTABLE	CALL
MAC SE	CALL
MAC SE/30	CALL



APPLE STANDARD KB	95
CRYSTAL PRINT PUBLISHER	2895
COMPUTER EYES PRO	CALL
DAYNA DRIVES	CALL
DESKWRITER	899
DRIVE 2.4	399
E-MACH, 17" MAC II	1399
E-MACH. C20 - MAC II	3699
E-MACH, COLORPAGE 15 - MAC	1 1499
E-MACH. TX-16" - MAC II	3199
E-MACH. TX-16" - SE'30	3199
E-MACH. Z21 - MONO. MAC II	1799
E-MACH. Z21 - MONO. SE	1799

MAC VISION199
MAC286 FOR MAC II 1025
MACRECORDER159
MACSYNC MONITOR 599
MEGAGRAPHICS 19" MON MAC II1100
MEGAGRAPHICS 19" MON PLUS 1150
MEGAGRAPHICS 19" MON SE 1100
MEGAGRAPHICS 19" MON SE/30 1100
MICRO TV450
NEC CDR-3501 CD-ROM READER 550
NEC LC SILENT WRITER3495
PLP PLUS LASER PRINTER 1599
PRACTICAL 2400 MODEM189



ETHERPORT II - MAC II	39
ETHERPORT IIL - MAC II	42
FAST CACHE IICI	79
FASTNET ETHERNET II	55
FASTNET ETHERNET III	37
FASTNET ETHERNET SCSI	78
HAYES 9500 EXT. MODEM	95
HYPER DIALER	2
INTERFAX 24/95 MODEM	42
KRAFT JOYSTICK ADB	4
LABELWRITER	17
LASERMAX 1000	CAL
MAC IICI	CAL
MAC IICX	CAL

RAPPORT	199
SCANJET PLUS1	095
SCANJET PLUS INTERF. KIT	450
SUPRA 2400 BAUD MODEM	129
TAPE BACKUP DRIVESCA	ALL
TURBO FLOPPY 1.4	349

#### MUSIC

Modio	
CONCERTWARE+	46
CONCERTWARE+ MIDI	115
DELUXE MUSIC	79
LISTEN	62
MASTER TRACKS PRO	310
MIDLINTERFACE - ALTECH	50

MIDI INTERFACE - PASSPORT	
MIDI PACK	
MUSIC MOUSE	
MUSIC PUBLISHER	3
NOTEWRITER	3
OVALTUNE	
PERCEIVE	
PERFORMER	34
PRACTICA MUSICA	
PROF. COMPOSER	34
STUDIO SESSION	
SUPER STUDIO SESSION	

# GRAPHICS/ DTP ADOBE TYPE MANAGER .....

ADOBE TYPE MANAGER	
ATM PLUS PACK	113
BLUEPRINT	
BUSINESS CARD MAKER	36
CANVAS	165
CRICKET COLOR PAINT	175
CRICKET DRAW	168
CRICKET GRAPH	115
CRICKET PAINT	115
CRICKET PRESENTS	279
COLOR STUDIO	
DESIGN STUDIO	CALL
DIGITAL DARKROOM	259
FASTFORM	
FONT STUDIO	
FONTASTIC PLUS	
FONTOGRAPHER	
FREEHAND	
GENERIC CADD LEVEL 1	79
ILLUSTRATOR 88	
IMAGE STUDIO	
MAC BILLBOARD	29
MAC DRAFT	
MACROMIND DIRECTOR	420
MATHCAD	
MINICAD+	
PAGEMAKER	
PAGEMAKER COLOR EXTENSION	129
PARAFONT	
PHOTOSHOP	
PIXEL PAINT (8-BIT)	215
PIXEL PAINT PRO. (24-BIT)	
POSTER MAKER PLUS	35
POSTERWORKS	CALL
PRINT SHOP	
PUBLISH IT!	
READY SET GO!	
STREAMLINE	
STUDIO 1	
STUDIO 8	
SUPER 3D	
SUPERPAINT	
SWIVEL 3D	
TYPE ALIGN	
TYPESTYLER	
ULTRA PAINT	
VIDEOWORKS II	100
WET PAINT CLIPART	CALL
WEI PAINT CEIPART	CALL

#### PROGRAMMING/

OTILITIES	
	ADOBE TYPE MANAGER
	CALCULATOR CONSTUCTION SET
	CAN OPENER
	COPY II MAC
	DISK TOP
	DISKFIT
	DISKFIT · NETWORK VERS
	DISKLOCK
	DOS MOUNTER
	FASTRACK

FLASH	CALL
FREEDOM OF THE PRESS	239
HYPER DA	39
LASERTALK	153
MAC TREE	39



MACCOMMAND	18
MACLINK PLUS	120
MACLINK/TRANSLATORS	99
MACPRINT	
MOCK PACKAGE PLUS	32
PC TOOLS DELUXE	45
PROTOTYPER	175
QUICK KEYS	59
QUICK LOCK	59
RETROSPECT	139
S.A.M.	
S.U.M.	
SCREEN RECORDER	

#### MONITORS E-Machines

Big Picture, Plus/Se 1175.
T16 Color Monitor2895.
T19 Color Monitor4195.
Z21 IQ Greyscale 2550.
RasterOps
Clearvue/SE Monitor 1399.
Colorboard 264 card 675.
Colorboard 264/SE card739.
Sony
Sony 1304 High Res 699.
Sony 1302 Standard Res 632.

SHORTCUT	CALL
SMARTSCRAP & CLIPPER	
STEPPING OUT II	53
SUITCASE II	45
SUPERCARD	125
SUPERGLUE	59
SUPERLASER SPOOL	
SUPERSPOOL	
TEMPO II	75
THINK'S C	154
THINK'S PASCAL	
VIREX	
VIRTUAL	CALL
VTDCC	65

#### ORDERS ONLY: 1-800-222-2808

**CUSTOMER SERVICE &** TECH SUPPORT: 213-370-3330

4451-B REDONDO BEACH BLVD. LAWNDALE, CA 90260 MAIL ORDERS AND P.O.S PLEASE CALL FOR MOST CURRENT PRICES,









#### SPECIAL PRICES ON CLARISTM SOFTWARE

Claris CAD ..... Filemaker II ..... MacDraw II ..... ..... 280. MacPaint II ..... . 89 Smartform Designer ...... 289. Smartform Assistant ...... 35.



# $\equiv$ The Macworld Catalog $\equiv$

Hardware	Graphics
Thurston	HyperCard Stacks324
Bar Code316	Languages325
Computer Systems	Lottery326
Data Acquisition317	Medical326
Emulators 317	Music/MIDI326
Hard Drives318	Programming Tools 326
Memory Upgrade318	Public Domain326
Peripherals320	Real Estate327
Printers	Religion327
	Sales/Marketing328
0.6	Scientific328
Software	Self Improvement328
Arts321	Spreadsheets328
Astronomy	Statistics520
Bar Code321	
Business321	Services
CAD/CAM322	Services
Clip Art322	Computer Insurance 329
Communications322	Data Conversion329
Desktop Publishing 322	Desktop Publishing329
Duplicator322	Laser Recharge330
Educational322	Training330
Engineering323	
Entertainment324	100 C. (2) 100 C. (100 C.)
Financial324	Accessories
Fonts	Mouse Pads
Genealogy 324	Supplies 330

# The Macworld Catalog Advertising Rates & Information

The Macworld Catalog section is a monthly link-up for advertisers and volume purchasers of Macintosh-related products and services. The Catalog offers advertisers a low-cost marketing opportunity and provides readers with a timely, easy-to-use menu for product buying.

Display ads are sold by column inches (2" minimum). Standard red is available as a second color. Text-only listings are available for a minimum of three issues at \$450 per issue.

For more information on *The Macworld Catalog*, call 800/888-8622.

#### The Macworld Catalog Advertising Sales Staff

Beverly Schneider, Telemarketing Sales Manager Niki Stranz, Western Account Manager, 415/978-3105 Carol Felde, Eastern Account Manager, 415/978-3152

501 Second Street San Francisco, California 94107 800/888-8622



- We configure for your needs...and your budget!
- We offer foll-free support...anytime you need us!
- We have the best prices on new Macs...period!

#### **Executive System!**

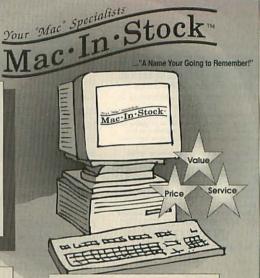
Macintosh SE/30 2MB RAM, 1.44 FDHD Apple 40MB Hard Disk Extended Keyboard & Mouse Hewlett-Packard DeskWriter Microsoft Word Microsoft Excel You Save \$2,529 !!

Retail \$7,224 Mac • In • Stock Only \$4,695

#### Career Starter System!

Macintosh SE 1MB RAM, 1.44FDHD Apple 20MB Hard Disk Apple Keyboard & Mouse Imagewriter II & Cable Microsoft Works You Save \$1,223 !!

Mac . In . Stock Retail \$4,018 Only \$2,795



#### Microsoft & Claris Specials!

Works:\$169 Word:\$219 Excel:\$229 MacWrite II:\$195 Filemaker II:\$229

Display Systems!

Apple 12" Mono - \$289, 1-bit Card - \$143
Apple 13" Color - \$719, 8-bit Card - \$469
Portrait Monitor - \$789, Port. Card - \$429
Apl. 2-Pg Mon - \$1549, 2-Pg Cd. - \$429
Radius 2-Pg Disp - \$1099,Card - \$449
SuperMac 19" 256-GS System - \$1999
SuperMac 19" Color 8-bit Sys. - \$4349
SuperMac 19" Color 24-bit Sys. - \$6495

#### **Publisher System!**

Mac II CX, 5MB RAM, 80MB HD Extended Keyboard & Mouse Radius Two-Page Display & B/W Card Apple Laserwriter II NT Apple Scanner Microsoft Word PageMaker, Freehand, all Cables. You Save \$6,410 !!

Retail \$18,209

Mac • In • Stock Only \$11,799

#### True Color System!

II Ci, 8MB RAM, 210MB Rodime Cobra Extended Keyboard and Mouse SuperMac 19" Trinitron Color Monitor SuperMac Spectrum 24 Series III Card Hewlett-Packard PaintJet XL Printer Microtek 300Z Color/Grayscale Scanner PhotoMac, SuperPaint, Digital Darkroom You Save \$9,361 !!

Mac • In • Stock Retail \$26,360 Only \$16,999

#### Brand New CPU's & Configured Systems!

Description	RAM	SE	RAM	SE/30	II CX	II CI	
w/FDHD Floppy	1	1,849	1	2,799	3,295	4,199	
w/Apple 20mb	1	2,149					
w/Apple 40mb	2	2,429	1	3,149	3,795	4,795	
w/Apple 80mb			4	3,999	4,599	5,695	
w/Quantum 80mb	4	2,995	5	3,949	4,519	5,349	
w/Quantum 105mb	4	3,099	5	4.049	4,619	5,449	
w/Cobra® 100mb	4	3,199	5	4,149	4,719	5,549	
w/Cobra® 210mb	4	3,549	5	4,449	5,069	5,899	
		TO STATE OF THE PARTY OF THE PA			-	20.00	

#### **Printers & Scanners**

Apple Laserwriter II NT	\$3199
Apple Laserwriter II NTX	\$4299
Apple Imagewriter II	\$ 437
Hewlett-Packard Deskwriter	\$ 879
HP PaintJet+ w/Mac Int	\$1199
HP PaintJet XL w/Mac Int	\$1999
HP ScanJet+ Scanner & Int	\$1649
Abaton 300GS Scanner ∬	\$1395
Abaton 96/24 Fax Modem	\$ 449

Memory Upgrades
For All Macs and Laserwriter II NTX

**Best-Priced** Portables!

w/1.44 FDHD Retail Our Price Only \$4,349 \$5799

w/40M HD Our Price Retail Only \$4,575 \$6499 Most Accessories Available! **Fax Your Request** For A Quotation! (213) 322-1486

©1990 2M Grou dba Mac•In•Stock<sup>11</sup> El Segundo, CA (213) 322-1455

990 2M Group

ac-In-Stock\*\*

Gundo, CA

22-1455

Accident Special Spec

TERMS: Personal or business checks. Leasing available for qualified businesses. Shipments by UPS or FedEx F.O.B. El Segundo. CA residents add sales tax. Prices subject to change without notice. WARRANTY: We support manufacturers' warranties for the full term on all items sold. We will repair or replace at our expense.

Call Us Last! Toll-Free:

800-633-1538

CIRCLE 692 ON READER SERVICE CARD



#### Hardware

#### Bar Code



Simplify Data Entry, Retrieval & Collection

The power of automation, simple, accurate, & economical. As easy to install as plugging in your keyboard. No additional software to buy, works with any program that accepts keyboard treat.

works with any program that accepts revised input.
You can use existing bar codes or create your own. Scanning takes less time and training than manual entry. It is very Accurate. You select settings with a simple bar code menu. Setting are stored in non-volatile memory.
Models for all Macs. Keyboard wedge prices from \$399.00. Portable systems from \$619.00. Fonts from \$350.00. Call Now to Order or for Information.

Call Now to Order or for Information tel 800 347 3371 fax 209 473 0381

#### NEROS

P.O. BOX 690787 STOCKTON, CA 95269-0787

CIRCLE 643 ON READER SERVICE CARD

**BAR CODE & MAGNETIC STRIPE READERS** 

#### Computer Systems

Mac Systems	
Mac Portable 1MB/40MG	\$4595
Mac Portable 1MB	\$3995
Mac IICI 1MB	\$4195
Mac IICI 1MB/40MG	\$4795

Mac IICX 1MB \$3188 Mac IICX 1MB \$3688 Mac IICX 4MB/80MB \$4888 Mac IIX 1MB \$3488

All items new Visa/MC add 2% I.C.C.

16175 Roscoe Blvd. Sepulveda, CA 91343 818/894-2222 Fax: 818/891-3285

818/894-2222

N

N

Fax: 818/891-3285

Mac IICI 1MB/80MG

Mac Systems	
Mac SE/30 1MB/40	\$2695/2995
Mac SE/30 4MB/80MB	\$3795
Mac SE 2DR	\$1795
Mac Se 2/MB/40MG	\$2295
Image Writer II/LQ	\$425/959
Laser Writer NT/NTX	\$3388/4688
HP Desk Writer	\$819
Reg Keyboard/Extended	\$99/175
8 Bit Color Card	\$465
13" Color Monitor	\$695
Apple Full Pg. Monitor/Ca	ard \$1149
I.C.C.	
16175 Roscoe Blvd.,	
Sepulveda, CA 91343	

Computer Rental

#### Also Available:

- Macintosh
   IBM PS/2
- Compaq Laser Printers
- Laptops Portables

And a host of other peripherals! Next Day Delivery Anywhere in the U.S.A.

Call Toll-Free

CIRCLE 551 ON READER SERVICE CARD

# Parts/Systems

Shreve

\$5795

Systems

2421 Malcolm St. Shreveport,La.

We BUY Systems! Trades & Upgrades-CALL!

La. call 318-635-1121 FAX 318-865-2006

CIRCLE 644 ON READER SERVICE CARD

#### DATA Computer Ctr. Tel: (213) 470-9555 Fax 470-9457 2253 Westwood Blvd. L.A. CA 90064

Laser Writer SC/NT NTX/Qume Laser Printer Mac Plus 1Mb 1Dr. Mac SE 1Mb 2Dr. 2095/3495 1245 1795 Mac SE/30 1Mb 1Dr. Mac IICX 1Mb 1Dr. Mac IICi 1Mb 1Dr. 4395 Mac Portable 40Mb 1Dr. Image Writer II/LQ HP Deskwriter 437/985 Quantum int. 40/80/100Mb 469/795/895 Rasterops Monitors/Cards; CMS Ext. Hard Drives, Memory Simus in stock: All configs. & same day shipping available

ORCLE 589 ON READER SERVICE CARD

SE2

#### FOR MACINTOSH PLUS, SE & II Connects on keyboard or ADB Requires no additional program or port Does not affect keyboard or mouse

Industrial quality, heavy-duty units Also available SmartCard encoder/reader

Magnetic encoder Code 39 UPC & Printing Software Portable Bar Code Reader

**TPS Electronics 4047 Transport Street** Palo Alto, CA 94303 415-856-6833 800-526-5920 Telex: (Graphnet) 371 9097 FAX: 415-856-3843

CIRCLE 666 ON READER SERVICE CARD

#### BAR CODE READERS

#### For All Macintosh Models

- No software changes Attaches as 2nd keyboard
- or through ADB Installs in seconds
- Reads UPC/EAN, Int 2 of 5, Codabar, Code 128, MSI, and Code 39
- Outstanding read rate

#### Complete with Steel Wand-\$399 Complete with Laser—\$989 Magstripe Option—add \$100 64K Portable Reader—\$849

1 YEAR WARRANTY 30 DAY \$\$ BACK GUARANTEE

CA 408-458-9938 800-345-4220

417 Ingalls Street Santa Cruz, CA 95060

VORTHINGTON DATA SOLUTIONS



Hong Kong FAX.:(852)7211828 CIRCLE 595 ON READER SERVICE CARD

#### Build Your Own Mac

New book 2nd edition shows how to do it! Assemble CAT Mac from readily available catalog parts & save \$\$ over new/used systems. Save \$\$ on upgrades too! Hints, tips, & secrets in new 2nd edition from worldwide reader feedback & numerous illustrations, photos make it easier than ever! Covers 128K thru SE 30 Mac II, IIcx, \$24.95 postpd. Visa/MC, chk. US/ Can. Overseas air \$6. Brant Associates 4420 SE Mark Kelly Ct. P.O. Box 68708 Portland, OR 97268

#### Extraterrestrial Prices

Beat all prices, plus lots of freebies! Call for \$lowest prices. COD. MacPlus \$1045

\$1749

SE2/32mb, SE/30-4/80mb \$low Ilcx \$3149 IIcx 40mb \$3675 IIcx 4/105mb \$4249 Laserwriter IINT \$3099 IINtx w/cable/toner \$4299 IIci, Portable \$low Jupiter Computers,

624 Knox Ave. Fontana, CA 92336, 714/829-2953

Fax: 714/356-1178





CIRCLE 605 ON READER SERVICE CARD



CIRCLE 604 ON READER SERVICE CARD

#### BizPowerTools

BizPlanBuilder™ New v.4.0. Intuitive & logical business & marketing plan template on diskette for raising capital, launching new products or services. 90+ pages of outlines, headlines, written texts & ideas... formatted into 33 MacWrite/MSWord files. Sales & marketing oriented—follow tutorials, fill in the blanks, edit into a finished plan. Linked financials in Excel (SYLK). Proven successful. 599

We applied for a loga in early. November.

We applied for a loan in early November and by Christmas we had \$4,200,000.~ It's excellent—just the thing we need. It's saving us about 90% of the work.-My CPA highly recommends it.~

Companion software packages:	
Employee Policies Handbook	\$99
Business Agreements Collection	\$99
· Equip/Real Estate Investment Analysis	\$139
Mfg Planning spreadsheet MRP	\$149
· Private Stock Offering raise up to \$1Mil	\$149
Limited Partnership Agreement	\$149
DealMaker™ Business Valuation	\$395
■ Leverage your time & Macintosh	MC
NAN 800/ 442-7373 toll-free	Visa

CIRCLE 685 ON READER SERVICE CARD

415/ 941-9272 outside U.S Amex

#### **KIWI COMPUTERS**

1	Mac Plus	.\$12	25	0
١	Mac SE 2 drive	.\$1	89	5
	Mac SE 40mb			
	Mac Portable 40mb			
	Mac SE/30 40/2mb			
	Mac SE/30 80/4mb			
	Mac IIcx 40/2mb			
	Mac IIcx 80/4mb	\$4	30	Ś
ı	Mac IIci 80/4mb	\$5	10	5
١	Mac IIci 100/5mb	\$5	50	5
١	Mac IIfx 80/4mb	\$7	10	5
ı				
١	Apple color monitor	φ	12.	2
١	Apple 8 bit video card	TQ	101	2
į	Apple keyboard	⊅	LO	ב
١	Apple ext keyboard	\$	1/:	5
	Imagewriter II	\$4	150	)
	Laserwriter NT			
	Laserwriter NTX	.\$43	39:	5
	H.P. Deskwriter	\$8	34:	5
l	All items new. 1 year wa	rran	ty.	

All items new. 1 year warranty.
Most items in stock today.
Visa & Mastercard add 2%
C.O.D. orders accepted.

KIWI COMPUTERS P.O. Box 67381 Los Angeles CA 90067 (213)553-4507

Fax (213)286-9667 Mon-Fri 8.30am-4.30pm

CIRCLE 608 ON READER SERVICE CARD



CIRCLE 617 ON READER SERVICE CARD

#### Data Acquisition

Data Acquisition & Analysis Complete hardware & software solutions for the scientist & engineer. Acquisition hardware & software, Analysis software, Signal conditioning modules, & Language interfaces. A friendly, knowledgeable technical staff can guide you from start to finish with proven solutions in Industrial, Scientific, Engineering & Laboratory environments. Call or write for a catalog & price list. BIOPAC Systems, 5960 Mandarin Dr. #D5 Goleta, CA 93117 805/967-6615

#### **Emulators**

# II in a Mac

An Apple //e computer ...all in software!

Run Apple II software on your Macintosh. Convert Apple II files to Macintosh files.

\$149.95 Add 53 for P&H COMPUTER: applications, Inc. 12813 Lindley Drive Raleigh, NC 27614 (919) 846-1411

CIRCLE 583 ON READER SERVICE CARD

#### It's simple.

Macworld
gives you all
the important
buyers with
a single
buy.

August Catalog ad close date:

May 23

Call 800/888-8622 to reserve your space.



Hard Drives



Memory Upgrade

# MEMORY UPGRADE

### LOWEST PRICE!!!

- 1 Meg Module
- 4 Meg Module
- NTX Module
- Laptop Module
- Lifetime Warranty
- 30 Day Money Back Guarantee
- Credit Cards & Personal Checks

FREE Installation Kits

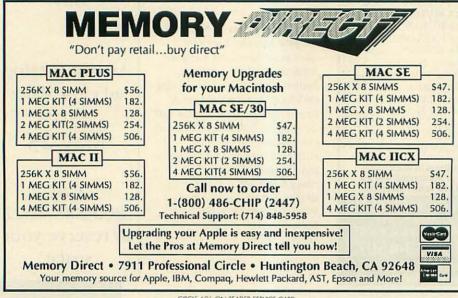
(800) 622-2210

PO FAX#:(512) 794-8520 Same day shipping



4030 Braker Lane West Suite 350 Austin, Texas 78759

CIRCLE 690 ON READER SERVICE CARD





CIRCLE 576 ON READER SERVICE CARD

CIRCLE 691 ON READER SERVICE CARD





### When you get serious about your Macintosh, give PSI a call.

No more kidding around. PSI manufactures all the upgrades you need for your oldest Mac Plus to your newest Mac Portable. We make 1 meg SIMMs, 4meg SIMMs, LaserWriter IINTX SIMMs, Portable Memory upgrades, an internal FAX/Modem for the Portable, a Cache Card for the Ilci, and a removable SCSI Hard Drive for all your Macs. We can satisfy your every Mac need under one roof!

> 800-622-1722 408-559-8544 in CA

2005 Hamilton Avenue, Suite 220 San Jose, CA 95125

CIRCLE 634 ON READER SERVICE CARD

- 80 & 70 ns Speed
- Low Profile, Surface Mount
- High Quality 4-Layer Board
- Lifetime Warranty
- · Visa, MC, No Surcharge
- Same Day Shipping

IBM & 4 MB SIMMS for all models: Mac II fx SIMMS

LaserWriter II NTX SIMMs in stock

SOUTH COAST ELECTRONICS

10920 Wilshire Blvd. Suite 1100 Los Angeles, CA 90024

213 · 208 · 3260 Fax 213 · 208 · 3282

800•289•8801

CIRCLE 654 ON READER SERVICE CARD

#### One of the Nation's Fastest Macintosh **Upgrade/Repair Facilities is Growing!**

SIMMONS CONSULTING IS NOW SIMMONS MICROSYSTEMS

#### Same Day Turn-Around - Nationwide 30 Minute Turn-Around - Locally

- · New and Used Macintosh Systems Available
  - 120 Day Warranty on New Equipment 90 Days on Used!
    - Requests for Quotes Via FAX
    - Nationwide Leasing Capabilities for Businesses
    - · Dealer Inquires Welcome



(215) 352-6883 Ext. 30

FAX # (215) 352-6975

6417 Market St. Upper Darby, PA 19082

CIRCLE 596 ON READER SERVICE CARD

#### Announcing the SIMMER

Adds SIMM sockets and SCSI port to your 128/512 Macintosh

\$199 (0 Meg)

1M \$249,2M \$335,2.5M \$349,4M \$469 Dealers Wanted!

#### 1 Meg SIMMS \$69 w/Trade

Low profile SOJ 80 Nsec Lifetime Guar. Immed. Delivery

Digi-Graphics 764 E Village Way Kaysville, Ut 84037 (801) 544-2009





512Ke - Plus **\$295** 512K - Plus **\$625** 

128K - Plus \$695

**UPGRADES!** 

We do new and used equipment/ parts!

RAM • Guaranteed Lowest

#### Peripheral Outlet

314 S. Bdwy • Ada, OK 74820

(800) 332-6581

**DEPEND ON** OUR SIMMs.

#### DEPEND ON OUR UNDERPRICES.

 Our SIMM prices absolutely can't be beat, we buy in quantity, and pass the savings on to you.

 Lifetime overnight replacement warrantee,

we'll replace any NECS SIMM for any reason within 24

hours of your phone call. Every order shipped directly from stock—no backorders.

With over ten years of industry experience, NECS is one of the most advanced and dependable semiconductor distributors in the world. Building from this technical expertise, our Memory Division now offers SIMMs at unbelievable prices for all your MAC expansion needs. Let us prove that our prices—and quality—can't be beat. Call now for immediate cross-referencing and delivery.



Call and ask for our Memory Division at 1-800-922-NECS.

292 Cabot Street, Beverly, MA 01915 Telephone: 508-927-8250 Telex: 882-685-NECS UD. Telefax: 508-922-1341

CIRCLE 562 ON READER SERVICE CARD

Continued...

CIRCLE 610 ON READER SERVICE CARD

CIRCLE 687 ON READER SERVICE CARD

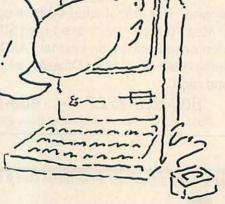


reports of my demise are bavefaced lies!

# Mac Rescue™ to the Rescue

6 megs of RAM for Classic Macs. Burial at sea for the Classic Macs? Never! There's years of productive life in all enhanced 128K and 512K Macs. Mac Rescue gives them the functionality of a Mac Plus, up to 4 megs of RAM plus a 2 meg RAM Disk and a SCSI Port. The obedient daughterboard snaps on the motherboard in minutes. No need to fold, spindle or solder. Reuses 256K SIMMS. One year warranty. RAM Disk software available.

A RAM Disk instead of a hard disk. In many situations, the RAM Disk eliminates the need for a hard disk, you just load the application(s) into RAM and use the floppy drive



for data transfer. The RAM Disk can save your pennies for other more important uses.

We design, make and market 256K, 1 meg and 4 meg SIMMS, Softstep® memory expansion modules and Mac Rescue™ an upgrade board for Classic Macs. All have a one year warranty. Call today.



Ford Centre, Suite 1180 420 North Fifth St. Minneapolis, MN 55401 (612) 371-0061 (800) 950-CARE (2273) (612) 371-9342 Fax

Dealer Inquiries Welcome. Visa/MC Accepted.

CIRCLE 584 ON READER SERVICE CARD

#### **Peripherals**

cheaper than anyone else.

800-654-3242

Computer Systems Int'l. 636 Sixth Avenue NY, NY 10011 International:

Our hours: 10 - 7 Eastern time, Mon-Fri.

- 1. QMS ColorScript Model 10 Color Printer \$7985
- 2. Microtek MSF300Z Scanner 24-bit Color Scanner - CALL
- 3. 1 MB Simms 80 ns, Toshiba 5 year warranty - \$77
- 4. PLI Infinity 40 MB Removable Drive - \$945

5. RasterOps Colorboard 264 24-bit color card - \$555

- 6. RasterOps Colorboard 208 8-bit/24 color card - \$345
- 7. Rodime Cobra 100 MB Internal Hard Drive - \$985
- 8. Rodime Cobra 210 MB Internal Hard Drive - \$1325

CIRCLE 553 ON READER SERVICE CARD

#### LIQUIDATING

#### **PostScript Laser Printer**

Canon 8ppm, 300x300dpi, 2 meg RAM expandable to 3, 35 Adobe Postscript fonts,

\$2495

MC/VISA Accepted

CRA SYSTEMS INC. 800-950-8212

CIRCLE 574 ON READER SERVICE CARD

#### REMOVABLE HARD DISK SYSTEMS

REWRITEABLE OPTICAL

1.3 GB 650 MB

\$7925 \$4050

WINCHESTER

100MB

\$2605

\$1360

**50 MB** 

24 MONTH WARRANTY

See your local dealer or call:

DMA Technologies, Inc. 601 Pine Ave., Goleta, CA 93117 Call 805-964-0733 or 800-223-9443 Fax Inquiries:805-964-0734

Visa/Mastercard

CIRCLE 580 ON READER SERVICE CARD

#### TRIGON \land WEST

#### 1-800-325-8688

VEREX - EMAC HARD DRIVES	
IMPACT 20 (40ms)	\$439
IMPACT 40 (19ms)	
IMPACT 80 (19ms)	
IMPACT 170 (15ms)	
20DL Zero Footprint	
40DL Zero Footprint	
80DL Zero Footprint	
40MB INT (19ms)	
80MB INT (19ms)	
170MB INT (19ms)	
60MB 60T/Tape Backup	
ONNED DEDIDHEDALS	

COMMENT LIMITIE				
40MB (29ms)	Interna	al \$389	External	\$489
100MB (25ms)	Interna	al \$585	External	\$685
SOFTWARE		ABATO	N FAX M	ODEM
WORD	\$239	INTERF	AX 12/48	\$255
EXCEL	\$239	INTERF	AX 24/96	\$399
WORKS	\$175			
MACWRITE II	\$119	HEWL	ETT-PAC	KARD
MACDRAW II	\$249	DeskWri	ter	\$825
FILEMAKER II	\$185	Fonts &	Accessori	es-Call
DISKFIT V1.5	. \$55	PaintJet	************	\$949
DISKLOCK II	. \$99	Mac Inte	rface	\$75

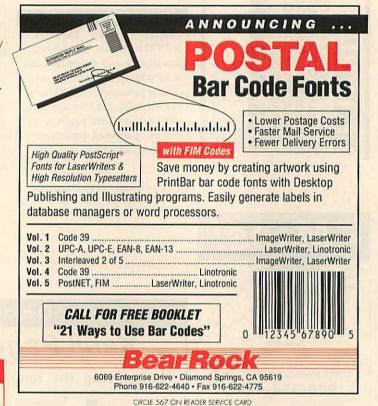
4500 Campus Dr., #521 Δ Newport Beach, CA 92660 VISA 8 MC Δ FAX (714) 474-4237 Δ Corp. PO's Welcome

CIRCLE 700 ON READER SERVICE CARD

#### Printers

Apple Daisywheel Printer TRUE letter quality on all Mac's & Apple II's. Fast 40 char./sec. on 1-page/ 6-part forms, 198 column, bold face, fixed/proport fonts. NEW \$449, RECOND.\$349 incl. easy mac point-&click printer resource, I/F cable, print wheel, & ribbon. Incl. foreign, legal & math symbols. New sheetfeeder \$49. Tractor \$149. Commercial quality w/ 90-day guarantee. Quality Discount Computers Inc.

#### Bar Code



#### Software

135 Artist View Dr.

Wellington, NV 89444

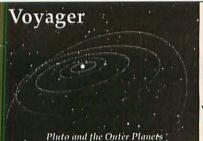
702/465-2473, 415/487-8148

Arts

QUESTIONS about DTP? Call us! We'll send you our free Catalog and Newsletter. For the best prices and real support on Graphics, Page Layout and Word Processing Software. You'll be glad you called: 1-800-MAC-BEAT

CIRCLE 648 ON READER SERVICE CARD

#### Astronomy



#### The Interactive Desktop Planetarium

- · "Fantastic software!"
- · "Best software value ever"
- "I haven't slept in 2 weeks!"

Exaggerations? Perhaps, but our users tell us that Voyager may be the Ultimate Sky Simulator and Computer Star Atlas.... for the Mac II, SE on Plus

Version 1.2 - \$124.50 + \$4.50 s & h Carina Software, 830 Williams St San Leandro, Ca 94577 (415) 352-7328

CIRCLE 696 ON READER SERVICE CARD

#### Business

#### Filemaker Templates

for small business and personal use. Modules available for:

- · Service Business
- · Construction Industry
- · Professionals
- · Personal Finance

One-write checking, GL, A/R, A/P, master mail, labels, job costing, PO's, invoices, statements, reports, more! Integrated. Comprehensive! Easy setup/ full support! \$149. Visa/MC, info call: Fine Line 459 Liberty Square Rd.

Boxboro, MA 01719 508/263-4322

1-800/955-4320

Mail Order Manager

SuperMOM-a complete database solution for catalog mail order businesses. Easy order entry . unlimited ship-to addresses · Inventory with multiple pricing · A/R · UPS · Credits & returns · Customer tracking by Group, Market, Promo & Salesman -Thorough reporting on sales, inquiries, & advertising response · Demo \$15 National Tele-Press P.O. Box 79 Mendocino, CA 95460 707/937-2848, 800/448-0988

#### **FINANCE**

FREE Sample Reports & Brochures

#### Mainframe Power for your Macintosh

Designed by a CPA and attorney. What-if analysis or print unique customizable reports. Better and more versatile than spreadsheets and calculators. Excellent customer support. Customization av. Present Value Calculates PV, FV, NPV, IRR,

Annuties, Variable rates and payments; and more!

Loan Amortization Any loan terms imaginable!

Biweeklys, APRs, Points & Fees and more.

Loan Comparison Compare and analyze 5 types of loans at once. Choose from several comparison reports. For new loans or refinancing analysis.

Keen track floans or refinancing analysis.

Accounting Keep track of loan or rental payments for entire portfolios or single accounts. Record payments as they are made. Many optional reports. 30 day money-back guarantee!

These programs have been making Attorneys, Accountants, Bankers, Real Estate and Financial Professionals more <u>profitable</u> over the past 7 years! Over 11,300 Users! Fast and reliable calculations.

Softflair • 8753 Parkview • Milwaukee, WI 53226 1-800-553-8338 Add \$5 S/H MC/VISA/AMEX

CIRCLE 649 ON READER SERVICE CARD

#### Instant ${f Business Tools}$

BizPlanBuilder™ 4.0 Intuitive & logical business & marketing plan template on diskette for raising capital, launching new products or services, 90+ pages of outlines, headlines, written texts & ideas... formatted into 33 MacWrite/MSWord files. Sales & marketing oriented—follow tutorials, fill-in-the-blanks, edit into a finished plan. Linked financials in Excel (SYLK). Proven successful. \$99+shpng

"We applied for a loan in early November and by Christmas we had \$4,200,000."

"My CPA highly recommends it."

Companion software packages: Employee Policies Handbook

Employee Policies Handbook
Sales Quota/Facat Mgmt mgrs reps
Production Financial Model
Private Stock Offering raise up to SIMil \$149
Limited Partnership Agreement
Unided Partnership Business Valuation

\$395

800/ 442-7373 +shipping 415/ 941-9191 CA Visa-MC-Ax +shipping



Leverage time & technology-save \$

CIRCLE 663 ON READER SERVICE CARD



#### CAD/CAM





Architectural (Residential & Commercial), Interior Design & Site Planning, The "Plumbing & Heating Supply House", The "Hardware Store", The "Electronics Shack", Welding, General Drawing Aids, Cartographic, 1804 Page User's Manual, And Much More, All for \$119.951

Advanced System Design, Inc.
Compatible with
1010 Stagecoach Bivd., P.O. Box 3131
Evergreen, Colorado 30439
MacDraw IIIM Evergreen, Colorado 80459 Claris CAD™ and MacDraw II™ (303) 674-2222 to Order (Sect) Claric CAD or MacDraw II™ CIRCLE A1.6 CV

CIRCLE 615 ON READER SERVICE CARD

#### Clip Art

#### Clipables™: EPS Graphics

If you use EPS graphics in any type of desktop publishing application, then you need to take a good look at Clipables. Clipables comes packed with more than 600 EPS illustrations on seventeen 800K diskettes, and covers more than 29 topics. Includes a 52 page User's manual. Call now for a FREE brochure. See us at the Macworld Expo - booth #2719.

C.A.R., Inc. 7009 Kingsbury St. Louis, MO 63130 800/288-7585

#### Desktop Decorating

Before you spend 1¢ on Clip Art Call Us For a Free Catalog! Low \$\$ Many Categories:

· FRAMES & BORDERS · SEASONAL

· CHRISTIAN · SOUTHWESTERN And Many, Many More... Commercial Quality - 300 dpi Paint,

TIFF & EPS available.

Call 505/299-8365 for catalog. Omnigraphics,

111 Montclaire Rd. SE, Albuquerque, NM 87108 800/999-5064

# CIRCLE THIS AD NO. AND GET A FREE MAXXI FOLDER ABOUT OUR CARTOONS. FREE HOW-TO DISK ON PAGE/TYPE DESIGN INCLUDED WITH EACH ORDER. O BOX 31165, EATLE WA 98103-1165 -800-842-9327

CIRCLE 621 ON READER SERVICE CARD

#### Communications

#### Burroughs emulation

Contact™ emulates TD/MT/ET and T27 terminals. Sophisticated data capture - all screen data can be used by spreadsheet, database or word processor... CANDE file transfer, fully à la Mac interface, soft keys, multiple pages & addresses, password protection... Soon: advanced file transfer

Avenue Software Inc. 1173 W. Charest Blvd. #390, Québec, Qc Canada, G1N 2C9 - Tel. (418) 682-3088

CIRCLE 564 ON READER SERVICE CARD

#### Physics/Chem Teachers:

The Physics Teacher's Test Maker. The Chemistry Teacher's Test Maker. Preprogrammed HyperCard Stacks produce an infinite number of exercises, each w/own answer sheet. Each requires student effort plus time! Pre-lab exercises, take home tests. High School/College, 24 exercises in each. All topics covered. Send for complete information! \$60 each/both \$100/demo disk \$10

Daedalus Scientific Software P.O. Box 787

Oakland Gardens, NY 11364 718/423-3881



World, Continents, USA & states by county! Ideal for publications and presentations. For FREE brochure please call or write:

800-334-4291

CIRCLE 625 ON READER SERVICE CARD

NEW! Defense graphics library designed for military and industry professionals. Call for FREE brochure. V/MC:PO's:COD PAINT • HYPERCARD • PICT • EPSF

NOVA Cube 1704 Tremont Ft Worth TX 76107

CIRCLE 650 ON READER SERVICE CARD

#### Desktop Publishing

# Japanese Desktop Publishing

# Kanji PageMaker™

#### Announcing the long awaited version 3.0!



List Price \$995.

\* Supports Japanese vertical format

\* Supports color separation

\* Compatible with KanjiTalk 6.0

\* Imports Japanese word processor documents 人気の秘密は使いやすさと高度な機能。縦書き 編集・ルビ入力・マスターページ・ペーストボ

ード機能をサポート。是非お確かめください。 \* NTX-J inquiries welcome.



#### Qualitas Trading Co. 6907 Norfolk Rd., Berkeley, CA 94705 Tel: 415-848-8080 Fax: 415-848-8009

### Developed by Aldus Corporation

CIRCLE 571 ON READER SERVICE CARD

#### Educational

#### TEST GENERATION & SCORING!

LXR-TEST™ 4.0 is the most advanced testing system available. Full character styling (tabs, leading), exact graphic placement, database selection, scoring, mastery reporting, item analysis, and much more! Certified question banks available from major exam publishers.

For free presentation disk, call, write, or fax: Logic eXtension Resources 9651-C Business Center Drive Rancho Cucamonga, CA 91730 (714) 980-0046 Fax: (714) 987-8706

CIRCLE 614 ON READER SERVICE CARD

# $\equiv$ The Macworld Catalog $\equiv$



#### Free MakeTest Demo Disk

New, easy-to-use software stores questions and print tests easily in any format. Has features teachers most want at an affordable price. Only \$149, 30-day money-back guarantee. To order MakeTest or demo disk, call 800-669-6574 or 415-665-5302.



MOUNTAIN LAKE®

258-B Laguna Honda Blvd. San Francisco, CA 94116-1409

CIRCLE 627 ON READER SERVICE CARD

#### Algebra I Homework Tutor™

Turns your Mac into a private tutor that actually helps you do your Algebra homework. Checks each step, gives hints, create unlimited practice problems. Solves & explains examples while you watch. Full Mac interface plus "smart" math editor that's easier than pencil & paper. \$119.95 check/ MO or call for free brochure. Missing Link Software P.O. Box 3280 South Amboy, NJ 08879 800/222-9296

#### List Learner™

List Learner provides an easy way for students or anyone to memorize information on any subject. Easily build lists of information and test recall in a Flash Card or Multiple Choice form. Easy to use! Comes with sample lists and extensive user guide. Requires HyperCard 1.2 or higher. \$59.95 Selective Memory, P.O. Box 710098, San Jose, CA 95171,

#### An all new edition of the Macintosh Educational Software Collection

- Hard-to-Find & Best Sellers
- HyperCard / Shareware
- Over 150 Titles
- All Subject Areas
- Teachers, Students, Parents

#### Send for Free Catalog!

CHARIOT •3659 India St. • San Diego, CA 92103 (619)298-0202

CIRCLE 575 ON READER SERVICE CARD

#### Teacher's Rollbook

A complete classroom management tool! Grade averaging and reporting. New quick grade entry · Full attendance records and totals · Records disciplinary actions · Class size reports · Up to 315 students per file · Remember birthdays & checked out items · Letters to parents ·Min. req. Mac 512KE, 2 drives ·\$99 ·Demo \$10.

Current Class Productions 22824 Berendo Ave. Torrance, CA 90502 213/326-4246

#### Engineering

#### Road Design

408/371-5595

MacRoad is an application for geometric design of roads. Features include: interactive graphical design of cross section & profile, quantity calculation, printing & plotting of drawings, save in PICT format, calculation of superrelevation & spirals, 3D drive through simulation. Demo available.

Creative Engineering 6 Antill St. Wilston Queensland 4051 Australia +61 73566271

#### RFDesigner<sup>TM</sup>

416/730-9611

...a powerful productivity tool for nodal analysis and gradient/random/yield optimization of complex RF/Microwave electronic circuits. Full Test/Graphic Mac interface. Options: full-featured schematic capture, Network Analyzer interface, S-Parameter Library, Works on all Macs (1-5MB). Starts at \$1,500. ingSOFT Limited 213 Dunview Ave. Willowdale, Ont M2N-4H9 Canada

#### E(E)PROM, MICRO & MEMORY CARD PROGRAMMERS WITH INTEGRATED MAC USER INTERFACE



- Connects to modem port. Pull-down commands menus.
- · No personality modules for E(E)Proms & Intel Micros.
- All 24/28/32 pin Eproms to 1 MBit (upgradeable to 32 Mb).
- 8741,-2,-4,-8,-8H,-9,-9H,-51,-C51,-52,-55,9761; EEPROMS. · Memory Cards (Sciko/Epson,GI):Flash Eproms; On Board
- Programming capability; Modular design; Easy F/W upgrades
- Stand alone E(E)Prom and Memory Card duplication/verify.
- Offset/split Hex, Binary, Intel & Motorola 8, 16, 32 bit.
- Built-in Eraser/Timer option (\$50); Gang Module ready.
- Direct technical support; Full 1 year warranty. VISA MC AMEX Call today for datasheets!

#### **B&C MICROSYSTEMS**

355 WEST OLIVE AVE., SUNNYVALE CA 94086 PH: (408) 730-5511 FAX: (408) 730-5521 TELEX: 984185

CIRCLE 565 ON READER SERVICE CARD

#### DATA ANALYSIS DIAGNOSTIC WORKSTATION SOFTWARE

AIM<sup>\*\*</sup> software automatically determines the functional relationships contained in raw data. It is fast and accurate. It climinates variables of little importance, and it does not overfit the function to the remaining data points.

- Your database with up to 25 variables

Input - Your database with up to 23 variables
Output - Least Predicted Sparred Error (PSS) polynomial,
and implementation network
With AlM<sup>48</sup> software your Macinton can be used as a powerful
diagnostic workstation to analyse data from: observations, historical
statistics, simulations, or expert generation. Many Al/Machine
Learning features are incidedo.



Program Support Associate 2340 Commonwealth, Suite Charlottesville, VA 22901 (804) 973 2564

CIRCLE 587 ON READER SERVICE CARD

#### STRUCTURAL SURVEYING, DEED PLOTTING FRAME mac™

#### **LANDesign** COGO/Surveying

- Graphics always visible Import/export data Deed plot, map check Radial stakeout
- ntersections
- Traverse adjustments

Other prog Deed plotting Road design Contour mapping Terrain modelling Earthwork calculations Estimating Detention pond design Digitzer input

 Frames, trusses, beams
 Enter data graphically onumerically
 Full graphics for structure, loads, axial, shear, moment, deflect
 US\$595 plus shipping US\$595 plus shipping

#### One-month money-back guarantee. Free s Other programs available for:

Structural Analysis

### For free catalog or info, call or write: COMPUneering (416) 738-4601

113 McCabe Crescent Thornhill, Ontario L4J 2S6 CANADA

CIPCLE SRI ON READER SERVICE CARD

# **IEEE 488 Interfaces**

Workbench . Icon-driven software Labtech Notebook · Menu-driven software MacII488 · NuBus IEEE board for Mac II MacSCSI488 · SCSI/IEEE controller Mac488B · Serial/IEEE controller MacSerial488 · IEEE plotter interface MacDA488 · IEEE desk accessory MacDriver488 • IEEE language driver

> Call or send for your FREE Technical Guide

(216) 439-4091



25971 Cannon Road Cleveland, Ohio 44146 Telex 6502820864 Fax (216) 439-4093

Reading (0734) 57-56-66 - Plaisir (1) 34810178 - Zurich (01) 821-94-44 Milan (02) 4154968 - Linkoping (013) 110140 - Gorinchem (01) 8300533 Munich (89) 839020 - Sydney (02) 958-8064 - Seoul (02) 578-7457

CIRCLE 606 ON READER SERVICE CARD

#### DesignWorks 2.5

Fully integrated and fully functional schematic and simulation on the Macintosh, featuring:

- integrated device symbol editor creates new symbols in seconds!
- new symbols in seconds!

   advanced schematic editing features such as rotation, attributes, bussing, multipages, rubberbanding, Cut/Paste

   fully interactive digital simulation with • fully interactive digital simulation with logic-analyzer style firming display • netlist support for SPICE, EDIF, PCad, OrCad, Douglas, Cadnetix, Redac, etc. • full 7400, 4000, LSI, analog libraries • PLD support with MacABEL.

DesignWorks: \$995 MacABEL: \$2350 Call for your free demo kit today!



- Capilano Computing 545-108th NE, Suite 6 Bellevue WA 98004 (604) 669-6343

CIRCLE 573 ON READER SERVICE CARD

Continued...



#### CircuitMaker 2.2

#### Integrated Schematic Capture and Digital Simulation

Interactive simulation with on-screen display of circuit behavior and logic analyzer timing display Editing features include undo and rubberband

move of devices and wires

Fully functional user defineable devices—import
symbols via PICT files &clipboard(requires opt 1

Export schematics and waveforms via PICT files

and the clipboard
Includes library of TTL, CMOS and analog
devices plus LED's, switches and much more

CircuitMaker 2.2 - \$150 Option 1 - User defineable devices \$100 Option 2 - Expanded device library \$100

MicroCode Engineering 1943 North 205 West Orem, Utah 84057 (801)226-4470

CIRCLE 657 ON READER SERVICE CARD

#### Entertainment



sounds of real birds that sing in the background. These professionally digitized birdsongs are played at random or by menu selection, and do not interfere with the foreground application. Forty songs are included in this two-disk set. A hard disk drive is required.

Dial 505-897-4024 Visa-MC

Corrales Software

POB 2730 Corrales NM 87048

CIRCLE 658 ON READER SERVICE CARD

#### Orbital Mech A Spaceflight Simulator

Honorable Mention: Simulation Category MacWorld Game Hall of Pame '88

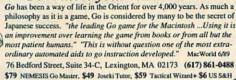
For 512K thru Mac IIz \$49.95 U.S. Includes S&H, sales tax

Studio Zero 6212 Samuell Blvd. Suite 153 Dallas, TX 75228

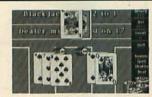
1-800-752-9222 x933 VISA/MC/AMEX

CIRCLE 594 ON READER SERVICE CARD

#### Go - meet your NEMESIS

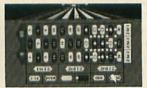


CIRCLE 665 ON READER SERVICE CARD



Toyogo, Inc.

(800) 4-TOYOGO



"Excellent Animation", "One of the best card games that I have seen on any computer system", "A wonderful new game", "It's just amazing this is programmed in Hypercard"....Neil Shapiro, Mac Hands On I love this game"......Brian Renard, Apple Computer, Inc. "10 well executed gambling games".......Hyperlink Magazine "Wonderful digitized sounds"......Computer Currents

#### ALL NEW....GAMBLIN' TIMES 3.0

The best gambling simulation available. Over 100 million different combinations. Craps, BlackJack, Keno, 7 Card Stud, 5 Card Draw, 5 Card Stud, Spit in the Ocean, Texas Hold'em, Five different Slots, Speed, 4x4, Liars Poker, Roulette. Multible gamblers by rank, financial statements, adjustable sound and music, statistical information, unlimited betting, real voice, user defined wildcards, betting systems, adjustable speeds, house percents and a lot more. Very fast XFCN's. Requires Hypercard 1.2, hard disk, 1 MB Ram

Check or MO for \$87.95 + \$3 SH., Wilson Marketing, 1239 E. Palm, Altadena, CA 91001

(818) 791-3656 MC/VISA

CIRCLE 645 ON READER SERVICE CARD

#### **Financial**

**Fonts** 

#### Your planning strategy has just improved!

- Instant financial planning, budgeting, modeling and analysis
- More control, quicker decisions and numerous options
- Increase cash flow and your bottom line/Lotus 1-2-3 or Excel
- Seven business financial models and four budget/cash flow programs

Order Today! Reg. \$595 Special \$399

1-800-777-4920

ILAR Systems Inc., 334 Baywood Drive Newport Beach, CA 92660 714-759-8987

CIRCLE 620 ON READER SERVICE CARD

# PostScript Font Software SAVE UP TO 35% Off List Price Authorized Dealer For: Image Chib

Adobe Bitstream Casady & Greene

Linotype Monotype

PRECISION TYPE 516-348-6777
595 OLD WILLETS PATH, HAUPPAUGE, N.Y. 11788
PostScript is a registered trademark of Adobe Systems Inc.

CIRCLE 609 ON READER SERVICE CARD

#### Genealogy

#### Family Heritage File™

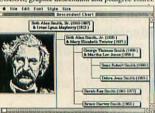
Most powerful genealogy program on Mac. Rated "BEST" by Macworld. Designed by genealogy professionals (LDS Church)

- · Enhanced · Fully relational · Graphic Pedigree, Family Group, Individual, Marriage, Surname · Unlimited History
- · Sorted Lists · Export to WP/data base/modem, \$149 + \$5 s/h. Demo \$7. Visa/MC. Free Lit Pak. Star-Com Microsystems Windsor Park East 25 West 1480 North Orem, UT 84057 801/225-1480

#### REUNION M the family tree software

Reunion quickly records and displays family

information and images. Click to navigate through generations of ancestors. Create large, COLOR, graphic descendant and pedigree charts.



Family groups • histories • references • calendars user-defined fields • mail merge • GEDCOM. \$129 plus \$4 s&h. Visa/MC welcome. Call or write for a free brochure and sample printouts.

LEISTER PRODUCTIONS
14 Hill Blvd., Mechanicsburg, PA 17055 14 Hill Blvd., Mechanicsburg, PA 17055 717-697-1378 — FAX 717-697-4373

CIRCLE 613 ON READER SERVICE CARD

#### MacGene™

"Genealogy Research Made Easy" Automate your family album with treecharts, statistics, histogram, folklore...Define your own fields, searches, reports, mailer, etc. Features: Auto link/generation, external files, Publish Ready, plus more... the FASTEST\_

- · NOT HyperCard
- · NOT IBM Port
- · \$145 Visa/MBG Applied Ideas Inc.
- Demo \$25

P.O.Box 3225

Manhattan Beach, CA 90266 Order/Free Info: 213/545-2996



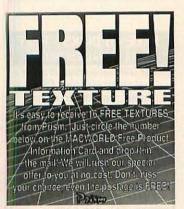
#### Family Roots<sup>TM</sup>

Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indices and much more. Customize to your own preferences. Standard Mac interface Call for FREE information. Satisfaction guaranteed MC/Visa/AE. **Ouincept** Box 216 Lexington MA 02173

617/641-2930, 800/637-ROOT

#### Graphics

Get "Comic Book" Color! You'll get spectacularly colorful printing without buying expensive software. Start putting sparkling color on your letterheads, cards, artwork, etc., right away-using MacPaint, FullPaint, MacDraw, etc. Graphic Arts Instructor shows you how-with step-by-step, easy to follow instructions in colorfully illustrated manual. For same day shipping, send \$15 to: The Logic Press P.O. Box 330 Sebeka, MN 56477-0330



CIRCLE 633 ON READER SERVICE CARD

#### HyperCard Stacks



RENDWARE

Huntington, CT 06484 (203)926-1116

# Trendware XCAL™ is a power-packed add-on for Hyper-Card that includes over 110 built-in functions for enhancing: data

entry & field formatting; searching; math calculations; date and text operations; totalling functions across multiple cards and more! XCAL's simple transparent window makes it easy to use but sophisticated enough for complex tasks!

**Built-in Functions** 

Financial Functions 10

12 10

Across Rackrounds

Search Functions

over 25 others!

Text Functions

Performs calculations automatically on numerical data, text and dates when data is entered into fields or an object is clicked; automatic user defined numeric, text & date formatting. Control Functions Date Functions Field Functions Calculations can be performed on groups of cards and subsets that match a search criterion, \$149.95 Math Functions

Trendware XCAL was chosen by MacUser as one of the 200 Best Products of 1989. - MacUser, Dec '89

CIRCLE 667 ON READER SERVICE CARD

#### Languages

MACTRAN PLUS Ver. 4.0 Integrated Made-for-Mac Development System. Includes: Editor, Optimizing Compiler, Source level Debugger, Linker, Library Manager, Profiler and Build facility. Supports 68020/030 & 68881/2 native code. Significant Vax Fortran & ANSI 8x extensions. High & Low level tool box

interface. Unlimited code segment

DCM Data Products. 610 One Tandy Center Fort Worth, TX 76102 817/870-2202 Fax 817/336-2416

You can learn French, German, Russian, Spanish or Latin with MacFlash Cards!

Over 2000 words & 1000 synonyms. Complete, accurate, multi-word English translations. Use it as a "point and click' dictionary. Test yourself on noun gender. Save word sets to disk. Ideal for ESL. German I/II, French I/II, Spanish I/II, Russian I, Latin I: \$25 each. S&H \$3, CA Res add 7.25% tax.

Money-back guarantee. Call or send for additional information. Order today by calling 1-800-283-4080 X850

The Language Quest Software Company Next Day Shipping
101 First Street, Suite 428, Los Altos, CA 94022 Free Add-Your-Words Stac

CIRCLE 683 ON READER SERVICE CARD

#### HyperCard Foreign-Language Software from HyperGlot

**NEW! LEARN TO SPEAK** FRENCH: THE CD COURSE FOR PEOPLE WITH CD-ROM

#### DRIVES OR CD PLAYERS! **NEW PRODUCTS IN ITALIAN!**

OUR NEW KANJIMASTER ON 12 DISKS WITH EXTENSIVE SOUND, \$149.00 COMPLETE SPANISH COURSE WITH EXTENSIVE SOUND, 149.00

Spanish and French Pronunciation with sound \$49.95 ea. Intro to Russian with sound \$39.95. Verb Tutors with Sound \$59.95 ea; Vocabulary Tutors, \$39.95 ea in French, German, Spanish, & Russian.

Call or write for our free catalog today! The HyperGlot Software Company 505 Forest Hills Blvd. Knoxville, TN 37919 (800)726-5087

CIRCLE 602 ON READER SERVICE CARD

#### Fortran on Your Desktop

No need to wait for time on the "big" computer any longer. Language Systems Fortran lets you run the same high performance Fortran programs at your desk. VAX-compatible extensions, high precision IEEE floating point data types, complete access to Toolbox, direct code generation for the Mac II, and the MPW programming environment make this compiler the most powerful Fortran for the Mac. Language Systems Corp. 441 Carlisle Drive Herndon, VA 22070 703/478-0181

#### Dialoger™ for HyperCard® Dialoger is a complete environment for

the design, creation and control of any kind of dialog window - entirely within HyperCard. Create dialogs in just minutes - without writing a line of script, Dialoger was created with both the "novice" and "power user" in mind. Using color, lists, popups and its interactive control, you can break through HyperCard's limits. \$94.29 the Result Software, Inc. 111 Providence Road Chapel Hill, NC 27514 919/493-7250

### Macworld Magazine.

When you get down to business, you can't do without it.



#### Lottery

Millions Upon Millions of Lotto Dollar\$ Have Already been Won!

Using Odds Improvement Multiplication™ United States Patent Number #4,712,796

MacLotto™ uses TWO Scientifically Proven Methods of Lotto & Keno Wagering which will Dramatically <u>Improve</u> Your Chances of Winning MORE Prizes!..and will Dramatically Improve your Chances of Winning Millions of Dollars MORE Each & Every Time You Play!

Special Bonus! To Bet or Not to Bet? Know the BEST time to play YOUR Lotto game!

U.S. Mathematical Laboratories 18 Main Street, Concord Ma. 01742 \$99 Complete! MasterCard and Visa call our TOLL FREE number! No COD sorry. You can FAX your order direct! 1 - 508 - 653 - 9193



1 - 800 -

CIRCLE 628 ON READER SERVICE CARD

#### Medical

CMAMedical ™ CMADental™

CMA Micro Computer 55888 Yucca Trail, Suite 5 Yucca Valley, CA 92284 Quality, Speed & Versatility

Compare these Features: Multi User Multi Tasking

Paper Claims Electronic Claim Files SuperBill Patient Ledgers Financial Histories

Solo and

Management Reports Production Analysis Responsible Party

AppleShare, Novell, TOPS, MacServe File Interchange Biting Audit & Backup with other Data multipractitioner office managesterns for the Macintosh.

Please CALL Today! (619) 365-9718 or Fax: (619) 228-1567 13th

CIRCLE 577 ON READER SERVICE CARD

#### MediSearch™

Communications/research software to access NLM's MEDLINE direct with a powerful, friendly Mac interface. Saves time and money. Easy to learn features for both new and sophisticated Medline users. Formats retrieved information for Word processor, EndNote™, and FileMaker™. Comprehensive manual. Satisfaction guaranteed, \$149 ppd in US. PO/MC/VISA.

Shoestring Solutions 402 Cortland Ave. San Francisco, CA 94110 800/333-9462

#### MacAnatomy™/MacSurgery™

...an electronic atlas of Anatomy in 4 volumes on disk in MacPaint™ format, Easily altered and copied to any program via the clipboard, Ideal for students of Anatomy in all the health and legal professions.

...is a HyperCard™ stack with multiple-choice questions and answers. Detailed discussions and documentations are provided. Ideal for continuing education and board preparation.

MacMedic Publications 7530 Harwin Houston, Texas 77036 713/977-2655

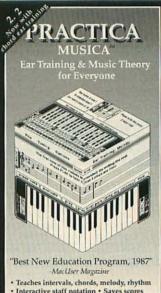
Medical Office Mgmt.

TessSystem™ software for insurance and billing. Our \$1295 package outperforms software selling at three times that price. Expandable line to grow with your needs. Call for product literature and DEMO software today! New modules include electronic claims and multi-user for Mac networks. Wabash Medical Resources, Inc. 6865 Parkdale Pl., Suite A Indianapolis, IN 46254 317-299-7800

#### Music/MIDI

MIDI MacBEAT's MIDI Guide will take you through the steps. For the best prices & support on Opcode, Digidesign, Passport, Mark of the Unicorn, Coda & MORE! You'll be glad you called 1-800-MAC-BEAT

CIPCLE 656 ON READER SERVICE CARD



- High quality sound IAIDI compatible
- Historical & computer-generated melodies
   Custom ear training melodies
   Includes textbook Beginners to advanced

\$125 • Call Toll Free 800-445-4866

ARSNOVA BOX 637, KIRKLAND, WA 98083

CIRCLE 500 ON READER SERVICE CARD

# Call Up Your Ad On Our

The Macworld Catalog.

800.888.8622

#### **Programming Tools**

#### MACINTOSH CROSS ASSEMBLERS

**UASM**TM

NEW! Version 3.0!

- TEXT EDITOR, CROSS ASSEMBLER, AND COMMUNICATIONS FACILITY IN A COMPLETE INTEGRATED DEVELOPMENT ENVIRONMENT MACROS
- CONDITIONAL ASSY us \$149.95
- CONDITIONAL ASSISTANCE OF CONTROL LABELS OF CONTROL LABELS OF CONTROL LOCAL AUTO LABEL CROSS REF SOR HEX FILE OUTPUT DOWNLOADS TO MOST EPROM PROGRAMMERS

  STANDARD TO MOST EPROM PROGRAMMERS

AVAILABLE FOR MOST B-BIT MICROPROCESSORS, CALL OR WRITE FOR TECHNICAL BULLETIN, 30 DAY MONEY BACK GUARANTEE, MCV/AE. Micro Diplects, Inc.

Micro Dialects, Inc DEPT. MW, PO BOX 30014 CINCINNATI, OH 45230 (513) 271-9100

CIRCLE 624 ON READER SERVICE CARD

#### Public Domain

#### FREE - 6 DISKS - FREE **FULL OF MAC SOFTWARE**

TRY US! Get 6 disks full of our best selling software - FREE! Games, Business, Education, Graphics, Programmers' Utilities, Finance, Desktop publishing, more. PAY ONLY \$5.00 FOR SHIPPING

#### **SATISFACTION GUARANTEED!**

INTERNATIONAL SOFTWARE LIBRARY 511-104 Encinitas Blvd • Encinitas CA. 92024



619 942-9998 since 1985



CIRCLE 554 ON READER SERVICE CARD





FREE SOFTWARE CATALOG

Over 1000 Macintosh quality software.
For fast service
Write to:

#### SOFTSHOPPE, INC.

P.O. Box 3678 Ann Arbor, MI 48106-3678 (313) 761-7638

CIRCLE 651 ON READER SERVICE CARD

Property Management
Comprehensive software for managing residential, commercial properties and condo associations. Includes check writing, recurring expenses, financial statements, complete management reporting and a full general ledger for \$1,195.

Yardi Systems, Inc.
813 Reddick St.

Santa Barbara, CA 93103 805/966-3666

#### Religion

#### Real Estate

#### Real Estate



CIRCLE 572 ON READER SERVICE CARD



Call for a FREE Guide to Public Domain & Shareware

All programs tested, organized.

1-800-2424-PSL

Public (software) Library P. O. Box 35705-MW

P. O. Box 35705-MW Houston, TX 77235-5705 1-713-524-6394

CRCLE 679 ON READER SERVICE CARD

#### Real Estate Software

The Ten Minu

■ Property Manager \$195

Accounting system for multiple properties. Ideal for investors who manage their own

■ ProAnalysis \$\$\$\$\$ \$295

A Sophisticated investment analysis program designed for the investor who demands professional quality analysis.

Demos Now Available!

Metropolis — software —

499 Hamilton Ave. Suite 202 Palo Alto, CA. 94301 (415) 322-2001

CIRCLE 623 ON READER SERVICE CARD

Church Data Master Plus for comprehensive data management for churches of all sizes.

Membership - \$265.

Contributions - \$265.

Accounting - \$265.

Integrated Package -\$795.

Multi User (3) \$995.

Multi User (4-10) \$1,395.

Full working demo send \$10.

Computer Helper Publishing 5898 Cleveland Avenue Columbus, OH 43231 1-800-533-5227

Continued...

# Reach your audience when it counts.

Catalog readers are ready to buy!

#### Property Management III

RealData's latest — A comprehensive management and accounting package for residential and commercial property, PM III is ideal for the individual owner as well as the professional manager. It offers integrated AR, AP and GL, maintenance tracking, lease abstracting, and extensive management and financial reporting. Available in four levels, handling from 50 units to unlimited, priced from \$395 to \$1495. Evaluation copy, with documentation, just \$45 (plus s/h)

Don't forget our best seller, Real Estate Investment Analysis for sophisticated income-property evaluation. Analyze income, cash flows, financing, rates of return, tax consequences and more. \$250

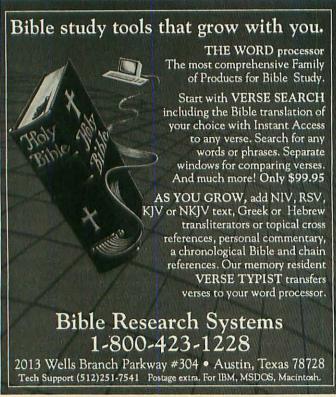
Also for investors, our new *Real Estate Partnership Plus*. Structure your limited partnership projections and presentations. \$295



ORDERS ONLY 1-800-899-6060 INFO (203) 838-2670 FAX (203) 852-9083

CIRCLE 638 ON READER SERVICE CARD





CIRCLE 568 ON READER SERVICE CARD

#### Sales/Marketing

#### Market Master for Mac

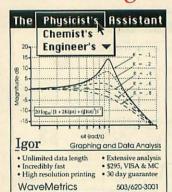
MacGuide calls it "the Best Sales lead follow-up you can buy." Enter leads whenever you get them & MarketMasterTM contacts the right people the right way at the right time. Prints letters, envelopes, phone lists, scripts, & NEVER FORGETS! Easy to learn & use. Frees salespeople to SELL & supports them to SELL MORE! Breaktbrough Productions 210 Park Avenue Nevada City, CA 95959 916/265-0911

#### Scientific

#### Geological Software

Great graphics, low prices! · Lithologic log plotting · Gridding · Contouring ·Piper/Stiff plots ·Oil & Gas economics ·Stereonet plots ·Plate tectonics ·Geophysical modelling, +much more for the Macintosh & PC \$50-\$1500. Call or write for FREE catalog of easyto-use software products. RockWare Inc. 4251 Kipling, Suite 595 Wheat Ridge, CO 80033 303/423-6171, Telex: 9102504964

"I saw it in Macworld!"



P.O. Box 2088 • Lake Oswego, OR 97035 CIRCLE 558 ON READER SERVICE CARD

#### Statistics

#### CLR ANOVA

Analysis of variance program that can compute up to a 10-way design with repeated measures and unequal n. Marginal means, plots of interactions, simple effect, range tests, contrasts, and more. Full Mac interface. Can read text files w/entries separated by spaces, commas, or tabs. \$100 + \$3 s/h. Clear Lake Research 2476 Bolsover #343 Houston, TX 77005

713/523-7842

#### Self Improvement

#### Goal Writer

The key to "Success" is writing your personal goals. Goal Writer takes your aspirations and dreams and turns them into realistic and effective goal plans. This \$99 hypercard stack guides you through the goal writing process starting from self evaluation, thru to organizing and tracking goals into seven major areas of life. Send check or money order to: Goal Writers Co.

Attn: Michael Wharton 1307 Brookstown Avenue Winston-Salem, NC 27101 919/724-3445

#### MINITAB on the Mac

Flexibility and a powerful range of statistical functions - master basic as well as advanced capabilities - within one hour.

- Regression Time Series
- · ANOVA · ANCOVA
- Hi-Res Graphics Macro Capabilities

.and more

Now available for Mac II, Plus & SE

CALL 800-448-3555



3081 Enterprise Drive / State College, PA 16801

CIRCLE 681 ON READER SERVICE CARD

#### Spreadsheet

#### Spreadsheet Compilei

At last, you can convert your Microsoft Excel your templates. Now you can protect your investtemplates into royalty-free stand alone applicament and create quality applications. For only tions. This means big savings for your users \$495, we invite you to try Masquerade™ at no risk and increased sales for you because your users with our 30 Day Money Back Guarantee. no longer need a spreadsheet program to run

To order or for more information call (714) 842-2492 Night Diamonds Software P.O. Box 1783 Huntington Beach, CA 92647

CIRCLE 618 ON READER SERVICE CARD



## You Can **Access More** than 375,000 Macintosh **Buyers**

Put your product in front of the people who do more than just shop. Your ad in The Macworld Catalog links you instantly with more than 375,000 qualified buyers.

The Macworld Catalog is the direct response section for the Macintosh marketplace. It's action-oriented advertising that reaches the experienced users who know what they want, want it fast, and look for it here-each and every month.

The most readers. The least cost. Immediate access. Just call The Macworld Catalog at 800/888-8622 and place your ad-today!

800/888-8622

#### Services

#### Computer Insurance



#### Safehare

#### **INSURES YOUR** COMPUTERS

Full replacement of hardware, media, purchased software. As low as \$49 yearly. Covers fire, theft, power surges, other accidents. Blanket coverage; no list of equipment needed. Call for information or immediate coverage.

1-800-848-3469 Local (614) 262-0559

SAFEWARE, The Insurance Agency Inc. 2929 N. High Street, P.O. Box 02211 Columbus, OH 43202

CIPCLE 640 ON READER SERVICE CARD

Insure in one easy step!

ComputerInsurance

ComputerInsurance PLUS replaces

surge, natural disasters, including

earthquake. Call Now to receive

comprehensive coverage and full

136 Moore Lane • P. O. Box 385 Piedmont, SC 29673

replacement.

your computer after fire, theft, power

**ECOMPUTERINSURANCE** 

Local 803-845-6699 . Hours: 10 a.m. to 6 p.m.

1-800-722-0385

CIRCLE 677 ON READER SERVICE CARD

#### Data Conversion

# WE CAN CONVERT DATAFILES TO/FROM OVER 1,500+ SYSTEMS IN VIRTUALLY ANY FORMAT! — ON DISKS OR TAPES!

- Minis
   Microcomputers
  - Processors
    Typesetters, etc.
- Formats like:
- MacWrite\*
   Microsoft Word\*/Works
- · FileMaker\*
- WordPerfect\*
- 4th Dimension
- Jazz\*
   Excel\*
   Tab-delimited ASCII etc.

Dedicated Word

#### CompuData Translators, Inc.

3325 Wilshire Blvd. Ste. 1202 Los Angeles, CA 90010

800/825-8251 • 213/387-4477

CIRCLE 579 ON READER SERVICE CARD

## TAPE/DISK



over 2000 computer systems:

Micro Computers • Typesetters Word Processors

CALL THE INDUSTRY LEADERS

PIVAR

#### 800-CONVERT

165 Arlington Heights Rd #MC

## CONVERSIONS 6



Conversion services to or from Magtapes · Mini Computers

COMPUTING SERVICES, inc.

708/459-6010 Buffalo Grove, IL 60089

#### Desktop Publishing

#### SLIDES!

#### DIGITAL PHOTO

- \* WILL IMAGE ANY PICT, PICT2, 24 BIT TIFF FILES
  - \* QUALITY SERVICE

NOW OFFERING POSTSCRIPT! CALL FOR DETAILS!

FOR MORE INFORMATION: \$5 402-393-1744

CIRCLE 585 ON READER SERVICE CARD

- Varityper 4300's-1200/2400dpi
   Color PostScript Printing
   Color/B&W/OCR Scanning

- Full Electronic Pre-Press

- Color Separations/Proofs
   Photoshop 32-bit Retouching
   Direct to Plate Color Printing



CIRCLE 660 ON READER SERVICE CARD

We image: PICT, PICT 2, 32-bit PICT, Scrapbook, TIFF PostScript



#### \$5 Slides

The "original" Mac \$5 imaging service!

- True customer service
- Unsurpassable 4K quality
- Color overheads and hard copy available

24 Hour Turnaround Standard (Rush Available)

In NY State Call 212.989.2727 Outside NY State Ca 800.445.9002

Nextwave Productions NYC, NY

Visa, MasterCard, American Express, Corporate Accounts

CIRCLE 557 ON READER SERVICE CARD

#### MAKE \$50,000/YR IN DESKTOP PUBLISHING

Some desktop publishers are making a killing.

What's their secret?

Find out how to make more money than you ever thought possible doing something you enjoy. Guarantee your success in this lucrative and fast growing field.

Call, write, or fax us now for free literature:

#### DTP Profit\$, Inc.

1600 Kapiolani Blvd. #1328C Honolulu, Hawaii 96814 Ph (808) 973-4353 Fax (808) 973-4358

CIRCLE 652 ON READER SERVICE CARD

Continued...

CIRCLE 590 ON READER SERVICE CARD

The ONLY "ALL-RISK" Policy Call today for immediate coverage

1-800-822-0901



#### Waldman graphics

Printers + Typographers

#### Desktop Designer's Super Service Bureau

Maintain highest quality standards and lower your costs. We can accept any PostScript file for B/W and full color output. Original electronic art and PostScript effects our specialty. Complete Visionary Gateway and V.I.P. services to powerful Scitex color center. Knowledgeable people, high resolution output, color proofing, quick

■ 1270 & 2540 dpi pages from Linotronic L300s ■ Repro, Pos. & Neg. film ■ Disk Conversion ■ 24 hour Modem ■ QMS ColorScript 100

- Scitex Color Imaging & Separations ■ Full Electronic Prepress ■ High Quality Color Printing Mailing
- 20 Messengers to NYC, Phila., N.J. Discount Adobe Dealer

Call Mike Gladden or George Gunzelman for more information about our extensive DTP services.

609/662-9111 800/543-0955 Modem - 609/662-3788

CIRCLE 669 ON READER SERVICE CARD

#### We Challenge You...

To find a service bureau that provides 1,200 and 2,400 dpi PostScript® output on RC paper and film with:

- · Consistently lower prices
- · A money-back guarantee
- · No minimums
- · Easy credit terms
- · Free 24 hour turnaround Well, look no further:

Icons & Images, Inc.TM Box 434 Greenwich CT 06836

800/869-9059, 203/661-4469

#### Laser Recharge



LASERQuipt brand cartridge for HP, etc. Black ....61.50 Colors....81.50 PC......51.50

DAY AIR Return Delivery

HP II-P cartridges rebuilt: 46.50

New cartridges from 79.50

800-777-8444

CIRCLE AT LON READER SERVICE CARD

Franchises •Wholesale



CIRCLE 632 ON READER SERVICE CARD



CIRCLE 673 ON READER SERVICE CARD

#### Training

#### BSc & MS in COMP SCI

The American Institute for Computer Sciences offers an in-depth correspondence program to earn your BSc & MS degrees in Computer Science at home. BSc subjects include: MS/ DOS, BASIC, PASCAL, C. Data File Process, Data Structures & Operating systems. MS program includes Software Engineering and AI. AMERICAN INSTITUTE for COMPUTER SCIENCES 1704-MW 11th Avenue South Birmingham, AL 35205 205-933-0339

#### Accessories

Mouse Pads

#### Company Logo Specialist

800-426-8196

Qty.	Canvas	Hard Surface
12	\$8.50 w/logo	N/A
72	5.90 w/logo	7.15 w/logo
144	3.96 w/logo	5.21 w/logo
500	3.40 w/logo	4.65 w/logo
1000	3.28 w/logo	4.53 w/logo
Canvas o	or Hard Surface i	n a variety
of colors	. Size 9.5"x8"x3/	/8".
Multi-co	lor OK. SAMPLE	S with
The same of the same	ALASA BAIMID	n 1

your logo \$12.50. ENTIRE pad imprintable and 100% guaranteed. Computer Expressions 3833 Chestnut Street Philadelphia, PA 19104 800/443-8278

Mouse Pads

Custom Printing Available.

Cloth: 13 Colors

Size: 8x71/4 8x91/2 81/2x11 12 Pads 3.25 3.50 3.75 3.00 3.25 3.50 144 2.85 3.00 3.25 PLASTIC: Blue, Platinum, Gray, Red &

Black. Size: 81/2x11 12 Pads 6.50 36 6.00

72 5.75 144 5.25

ASK US ABOUT OUR PICTURE PADS! Precision Line Inc. 14100 23rd Ave. N.

Minneapolis, MN 55447

612/557-1979, 1-800/328-0077

#### Supplies



CIRCLE 676 ON READER SERVICE CARD

#### Reclaims Desk from Disks



To Order: 1-800-942-4008

CIRCLE 694 ON READER SERVICE CARD





#### NUW GIVES **EYESIGHT TO** THE MAC BLIND

# ENLARGE YOUR MONITOR SCREEN

High quality lens by 3M coupled with a Polaroid anti glare filter. In a sleek mounting hood designed specifically for Mac monitors.

FINALLY A BIG CLEAR PICTURE!

To order, or for more info: •800-872-1051 •

Other models available. Dealer inquiries invited.

Less Gauss Inc. Box 5006 Rhinebeck, N.Y. 12572

CIRCLE 601 ON READER SERVICE CARD





CIRCLE 586 ON READER SERVICE CARD



CIRCLE 563 ON READER SERVICE CARD

# Questions?

Use the Reader Service Card to request free information about the products you see in The Macworld Catalog.



#### Pack your Mac in seconds!

Cordura case has internal padded pockets for mouse, keyboard and drive. Available in six colors. Extended Keyboard version also available.

For a dealer near you call toll free

1-800-548-0053 West Ridge Designs 1236 N.W. Flanders

Portland, OR 97203 CIRCLE 670 ON READER SERVICE CARD



for a Clean Machine

Protect your equip-ment from dust, spills, and aggra-vating downtime with ABCOM DUST COVERS for personal computer

Attractive, water re-sstant packcloth in NAVY, SILVER, or



Custom-fitted, stylish and durable.

With the original rain bow ribbon accent. Extensive selection of dust covers for over

400 models, including:

· IBM

. APPLE II SERIES · MACINTOSH and numerous printers

MC & VISA ACCEPTED. PLEASE WRITE OF CALL FOR COMPLETE PRICE LIST AND BROCHURE ABCOM 2333A N. SIERRA HWY, BISHOP, CA 93514 619/872-1946

CIRCLE 552 ON READER SERVICE CARD



#### The Best Case Scenario Airline Check-in or Local Use

Zero Halliburton Aluminum Mac Cases: Lightweight, Durable, Distinctive Styling Plus/SE Ilcx II/IIx Monitor Cases Portable Attache ImageWriter II

from \$299.95 1-800-542-4591 TCC 13101 Wash. Blvd., #110, L.A., CA 90066

CIRCLE 607 ON READER SERVICE CARD

# BEST-SELLERS

Months on chart	Last month	This month		Months on chart	Last month	This month	
	•	V	BUSINESS SOFTWARE	▼.	V	•	HARD DISKS*
61			Microsoft Word Microsoft	1		1	MacKit 140 Toshiba America
52	3	2	Microsoft Excel Microsoft	21	1	2	MacStack SD20 CMS Enhancements
40	2	3	Microsoft Works Microsoft	4	3	3	MacStack SD40 CMS Enhancements
48	4	4	Aldus PageMaker Aldus	32		4	Apple Hard Disk 20SC Apple Computer
21	5	5	WordPerfect for the Macintosh WordPerfect	6		5	Apple Hard Disk 40SC Apple Computer
2	6	6	Quicken Intuit				
15		7	QuarkXPress Quark				是一种。 第二种
37	7	8	MacWrite II Claris				ADD-IN BOARDS/MEMORY
14	9	9	FileMaker II Claris				
3		10	dBase Mac Ashton-Tate	1 30	3	1 2	ColorBoard 264 RasterOps
		郭		1	3		Radius Accelerator Radius
				13		3	Spectrum/8 Series III SuperMac Video Board/Large Screen Ryad
			EDUCATION SOFTWARE	17	3	5	Radius Interface Display Radius
15	1	1	Where in the World Is Carmen Sandiego?			19.5	natius interface bispiay Racitus
	-12		Brøderbund			1	
212	-	2	Where in Time Is Carmen Sandiego?				THE TANK COMMITTEE
2000			Brøderbund	机的反			UTILITY SOFTWARE
2	5	3	Where in the USA is Carmen Sandiego?	2	2	1	Adobe Type Manager Adobe
28	2	4	Reader Rabbit The Learning Company	2	3	2	SUM II Symantec
44	3	5	Math Blaster Davidson & Associates	2	1	3	SAM Symantec
			Davieson en associates	2	4	4	PC Tools Deluxe for the Macintosh
							Central Point Software
			ENTREDTAINMENT COPTWARE	1		5	Fastback II Fifth Generation Systems
			ENTERTAINMENT SOFTWARE				
6		1	SimCity Maxis Software			To be	<b>《其下科》,李宏宗《</b> 》(1)。《海学》(1)
41	2 3	2	Flight Simulator Microsoft		杜鹃的	F. S.	PRODUCT WATCH
4		3	Tetris Spectrum HoloByte Shufflepuck Cafe Brøderbund				Recent or forthcoming products of particu
		5	Leisure Suit Larry in the Land				interest.
			of the Lounge Lizards Sierra On-Line				ColorBoard 364 RasterOps
							24-bit graphics and real-time video board
							DrawTools Paracomp
			NIEWWO DV (DAM)		HER		Illustration tools for MacDraw II
		PRO N	NETWORK/DATA				Shade SystemSoft 3-D rendering packa
			COMMUNICATIONS		251		Shaub Systemsoft 3-D tendering packa
40	1	1	TOPS TOPS				Source: Exclusive InfoCorp survey of mon

February 1990.

roducts of particular

rendering package

Source: Exclusive InfoCorp survey of more than 125 Macintosh retailers and selected mail-order vendors. Covers sales during

\*Does not include hard disks installed at the factory.

43

36

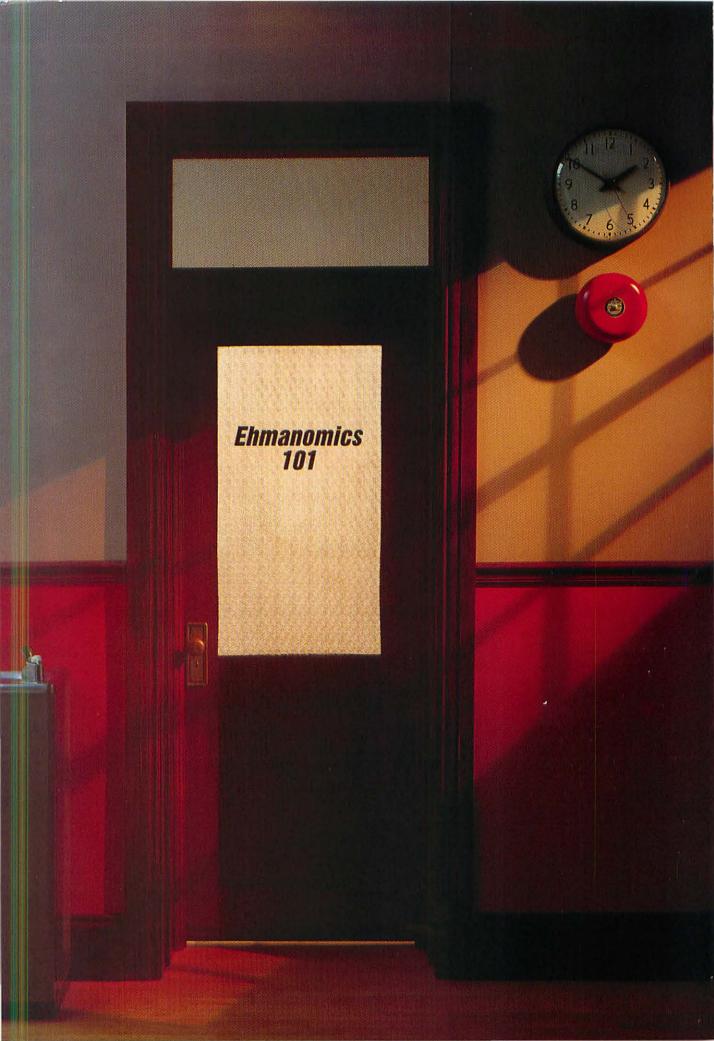
9

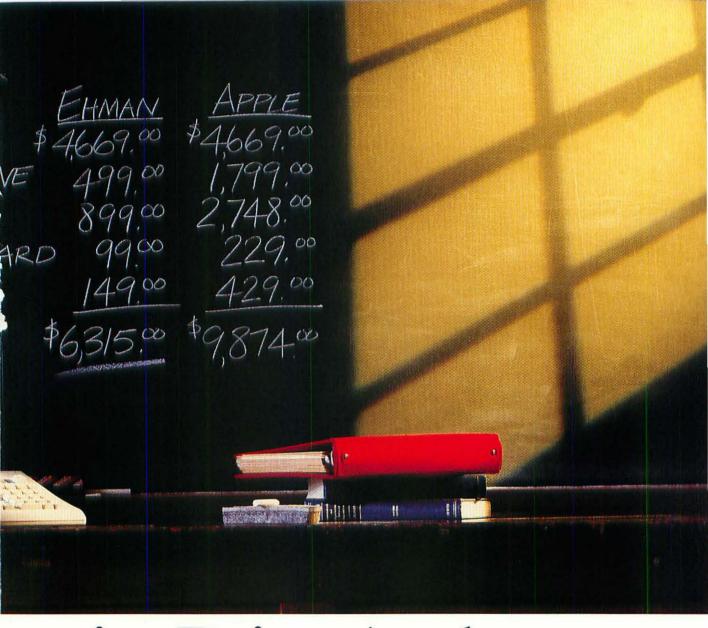
LocalTalk Apple Computer

MacLink Plus DataViz

AppleShare Apple Computer

Netware for the Macintosh Novell





# perior Price And cintosh Peripherals.

perfect solution for everyone who needs a big drive and protection of sensitive data.

And, with all Ehman peripherals, you get the added benefits of a lengthy warranty, free directtelephone support, free third-party utility software, a 30 day no questions asked money-back return policy and even an optional overnight loaner service program.

Ehman wrote the book on affordable Macintosh peripheral solutions, but you only need to remember one thing. Our phone number. Call us at 1-800-257-1666 and put us to the test.

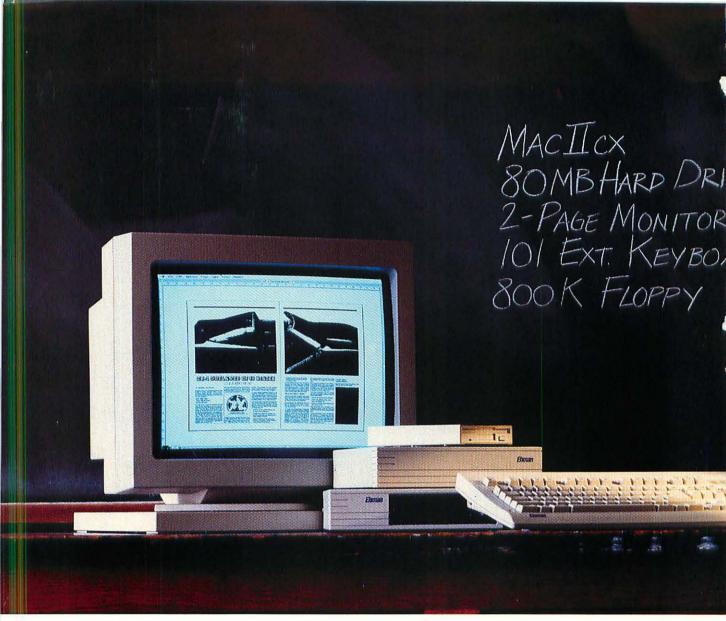
Size	(1	M	B	)				1	n	ternal					E	X	ternal
20 .										\$249							\$299
30+										\$299					•		\$349
400										\$379							\$459
45 .										\$329							\$399
60+										\$399							\$449
80+										\$449							\$499
800										\$599							\$649
										\$649							\$699
										\$899							\$999
										\$999							1,099

# **Ehman** The Apple Alternative

#### **Seagate**

Call 1-800-257-1666 or 1-307-789-3830 Fax 1-307-789-4656 Tech Support 1-307-789-1901

Circle 154 on reader service card



# The Study of Sur Performance In Ma

There is a concept they teach in college business classes. It goes something like this: When demand goes up, prices go up. That may be true in Economics, but not in Ehmanomics.

Ehman is now a leading manufacturer of Macintosh peripherals because we understand the real law of supply and demand: You need add-on peripherals, and we make them affordable.

It doesn't take a rocket scientist to tell you that because our quality is comparable to any on the market and our prices are lower, Ehman peripherals really are a better buy. Since 1985, tens of thousands of Mac users have been discovering that Ehman is out front in providing Macintosh users with the best combination of price and performance available.

Ehman can save you hundreds of dollars over a peripheral with an Apple logo on it, without sacrificing quality or performance. Our hard drives are fast, quiet and very reliable with a mean time between failure (MTBF) rating of up to 100,000 hours. Our two page monitor has a higher refresh rate than either Apple or Radius at less than half the price.

We even make one peripheral, a 45 MB Removable hard drive, that Apple doesn't. It's the



# EYESORE VS. EYE PROTECTION

As today's monitors get bigger and brighter, anti-glare filters become less of an option and more of a necessity.

The right filter can combat eye fatigue, help eliminate headaches, even reduce overall body stress.

Yet, the irony is that something so good for your eyes can be such an eyesore.

In fact, most filters look like they belong to someone else's system.

The fit is sloppy. The colors don't match. The materials are different.

Kensington has a different idea.

Instead of making a filter that will fit on any

monitor, we make filters

that will only fit a
specific monitor.
An example is our
Maccessories® SE AntiGlare Filter.

It looks so much a part of

the SE, you would think it was designed by the same people who designed the SE.

Circle 30 on reader service card

The styling is complementary. The color identical. Even the same material is used.

And unlike generic filters, the fit is perfect. So light passes through the filter, never around it.

Kensington uses only optical quality glass with a ceramic antireflection and scratch-resistant coating.

The result is a 96% reduction in glare. And an improvement in contrast and clarity of up to 20 times.



In short, the most advanced eye-protection system you can find today—it even filters out VLF and ELF radiation and dissipates static.

Kensington has custom designed screens for the Mac, Mac Plus, Mac SE, Apple IIGS, as well as for the entire Mac II family

of large screen monitors.

For a free brochure, and the dealer nearest you, call 800-535-4242. In New York call 212-475-5200.



